



AUSTRALIAN RADIATION PROTECTION AND NUCLEAR SAFETY AGENCY

**QUARTERLY REPORT
OF THE
CHIEF EXECUTIVE OFFICER
OF ARPANSA**

FOR THE PERIOD 1 JULY TO 30 SEPTEMBER 1999



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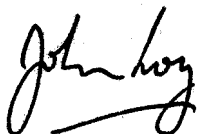
31 March 2000

The Hon Dr Michael Wooldridge MP
Minister for Health and Aged Care
Parliament House
CANBERRA ACT 2600

Dear Dr Wooldridge

In accordance with the *Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998*, I present to you my Quarterly Report covering the period 1 July to 30 September 1999.

Yours sincerely



Dr John Loy
CEO of ARPANSA

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FOREWORD

The *Australian Radiation Protection and Nuclear Safety Act (1998)* requires the CEO each quarter to prepare and give to the Minister of Health and Aged Care a report on the operations during the quarter of the CEO, ARPANSA, the Council and committees. The Act requires that the report include:

- details of directions given by the Minister to the CEO during the quarter under section 16 of the Act;
- details of any breach of licence conditions by a licensee during the quarter, of which the CEO is aware;
- details of all reports received by the CEO during the quarter from the Council and Committees; and
- a list of all facilities licensed under Part 5 of the Act during the quarter.

REPORT ON PERFORMANCE

(a) UNIFORMITY OF RADIATION PROTECTION FRAMEWORKS

National Directory of Radiation Protection

At their meeting on 4 August 1999 the Australian Health Ministers' Conference (AHMC) accepted a proposal from ARPANSA (prepared in consultation with the States and Territories) for the development of a National Directory of Radiation Protection. The proposal had previously been agreed by the Australian Health Ministers Advisory Council. The National Directory is 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.

AHMC also accepted the recommendation that, once developed, the provisions of the Directory should be implemented by all jurisdictions within existing legislation as soon as possible and with a minimum of further changes. The Radiation Health Committee, which is expected to be appointed in the October-December quarter, was given the task of managing the development of the Directory.

National Competition Principles Review

Terms of Reference for a National Competition Policy Review of Radiation Control Frameworks (NCP Review) has been agreed at officer level. On 10 September 1999,

the CEO wrote to Heads of Departments of all jurisdictions (except Queensland, which will not participate in the review) seeking their endorsement of the Terms of Reference and cost sharing arrangements. When this endorsement is obtained, the Terms of Reference will be put before Health Ministers (out-of-session). Contractors will then be selected to undertake the review, and it is proposed that the final report of the review will be made to Ministers in June 2000.

(b) ADVICE ON RADIATION PROTECTION AND NUCLEAR SAFETY

Community Obligation

Officers of the Regulatory Branch made presentations to three community groups during the quarter on the topic of radiation protection and nuclear safety. The presentations were undertaken to increase public awareness of ARPANSA's role.

Visiting Ships Panel (Nuclear) (VSP(N))

ARPANSA provided a report to the VSP(N), proposing a revision of the modelling of the reference accident used for assessing the suitability of Australian berths for visits by nuclear powered warships. This report takes into consideration advances in accident modelling, information on nuclear accidents and discussions held with representatives of States and Territories. Following a meeting of the CEO of ARPANSA with the Chairman of the VSP(N) to discuss arrangements for publishing the report, the draft was distributed to States and Territories for comment and endorsement.

Maralinga

The rehabilitation of the former British nuclear test sites at Maralinga by the Department of Industry, Science and Resources is essentially complete. All the contaminated material to be removed from burial pits has been placed in burial trenches. ARPANSA will monitor the remainder of the remediated areas over the next few months to assess that these areas have been rehabilitated in accordance with the clean up criteria.

Sun Protection

ARPANSA contributed to the Trends in Sun Protection Seminar of the Anti Cancer Council of Victoria in July 1999. At the seminar, aimed at people working in the sun protection industry as well as the general public, Dr Peter Gies presented a paper:

- Trends in Ultraviolet Radiation, *Proceedings of the Trends in Sun Protection Seminar of the Anti Cancer Council of Victoria*, Melbourne 8 July 1999.

(c) RESEARCH ON RADIATION PROTECTION, NUCLEAR SAFETY AND MEDICAL EXPOSURES TO RADIATION

Solar Ultraviolet Radiation Measurements and Protection

Research on a comparison of ARPANSA ground based solar UVR measurements with satellite UVR, ozone and cloud cover data has been published. The data were also disseminated at the seminar run by the Anti-Cancer Council of Victoria (see (b)) and at the annual conference of the Australian Radiation Protection Society in August. Colin Roy was an invited speaker and attended the International Symposium and Workshop on Measurements of Optical Radiation Hazards in Washington DC in September to present a paper on "Action spectra used in Standards". Papers published include:

- Surface UV radiation over Australia, 1979-1992: Effects of ozone and cloud cover changes on variations of UV radiation, *J Geophys Res* 104: 19135-19159, 1999.
- Action Spectra Used in Standards: Impact on Radiation Protection, Chapter in *Measurement of Optical Radiation Hazards*.

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

Northwest Institute of Nuclear Technology (NINT), China

During July and August the integration and testing of radiation detection equipment installed by ARPANSA staff in two specially modified vehicles was completed. This equipment, which is being supplied under a contractual arrangement between the NINT and APRANSA is similar to that developed by ARPANSA to monitor the effectiveness of the rehabilitation procedures at the Maralinga atomic test site.

Three engineers from the NINT visited ARPANSA for one week in August to inspect the equipment and undertake an "ex-works" inspection and acceptance of the vehicles prior to shipment to China; and in September two NINT staff completed their four month training on the use of the equipment. ARPANSA staff will visit Xi'an during October to commission the equipment and participate in the final acceptance testing specified under the contract.

Comprehensive Test Ban Treaty Organisation (CTBTO)

Work continued on the purchase, delivery and installation of radionuclide monitoring equipment for the establishment of airborne radionuclide particulate matter monitoring stations at Melbourne and Perth. However, due to delays in the delivery

of major items such as the air sampler and the detectors, it is anticipated that installation and commissioning of the stations will be delayed until at least February 2000. These stations, to be operated and maintained by ARPANSA, will be part of an international monitoring network being established by the CTBTO to monitor compliance with the provisions of the Treaty. It is planned to establish additional stations at Darwin and Townsville during 2000 and at Cocos Islands, Macquarie Island and Antarctica at a later date.

ARPANSA has entered into a contract with the CTBTO to undertake the site surveys for Darwin and Townsville by February 2000 and to provide an estimate of the costs involved in establishing similar station at Kavieng in Papua New Guinea.

Accreditation of Testing and Calibration Services

The preparation of the documentation necessary to gain quality systems accreditation of a number of services offered by ARPANSA has been accorded a priority. The initial draft of the Quality Manual for the RF calibration service was completed during the quarter and will be subjected to an internal audit and further refinement prior to lodging an application for accreditation. The quality manual for the Personal Radiation Monitoring Service is well advanced and it is ARPANSA's aim that both these services will gain accreditation by the National Association of Testing Authorities within the current financial year.

Activity Based Costing (ABC)

A number of workshops were conducted during the quarter to familiarise staff with the objectives of ABC and the capabilities of the PRODACAPO software, which was purchased to facilitate the adoption of a more comprehensive approach to the costing of the activities undertaken and the services delivered by the Agency.

Fabric Testing and Labelling

Demand for Ultraviolet Protection Factor (UPF) fabric testing, licensing and labelling continues as does the use of ARPANSA UPF swing tags. In the quarter, 94 testing jobs involving 298 fabric samples were processed and 31 trademark licences were issued. UPF licensees placed 62 orders for UPF swing tags totalling 643,000.

(e) COUNCIL AND COMMITTEE OPERATIONS

Radiation Health & Safety Advisory Council

The Minister appointed eleven members of the Radiation Health & Safety Advisory Council (RH&SAC) for a term of three years.

The RH&SAC advises the CEO of ARPANSA on radiation protection and nuclear safety issues.

The members are:

Dr Rick McLean (NSW)
Chair
Consultant Physician in Nuclear Medicine

Dr John Loy
CEO
ARPANSA

Mrs Jill Fitch (SA)
Radiation Control Officer
SA Health Commission

Mr Howard Ackland (NSW)
Radiation Control Officer
NSW Environment Protection Authority

Mr Peter Raue (NSW)
Representing the General Public
Computer Software Consultant

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

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

Ms Sylvia Kidziak (NSW)
Consulting Occupational Health Engineer

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

Dr Richard Smart (NSW)
Medical Physicist
St George Hospital

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

The first meeting of the RH&SAC was held in Sydney on 15 September 1999.

No reports were received during the quarter from the Council or the Committees.

Electro Magnetic Energy (EME) Reference Group

ARPANSA assumed responsibility for convening the EME Reference Group from the Department of Health & Aged Care during the quarter. The EME Reference Group consists of representatives from the Australian Mobile Telecommunications Association, Australasian Faculty of Occupational Medicine, Electromagnetic Radiation Alliance of Australia, Australian Consumers Association, Public Health Association of Australia, Australian Local Government Association, Department of Communications, Information Technology & the Arts, Department of Health & Aged Care, Consumer Telecommunications Network Inc., and EMR Safety Network International.

The EME Reference Group was established to provide input to the EME Public Health Issues Committee on issues relating to the use of the radiofrequency spectrum; in particular, on issues that may be causing public concerns and on proposals to address these concerns. The EME Reference Group met on 11 August 1999 and had discussions with Dr Michael Repacholi of WHO on the WHO International EMF Research Project.

(f) REGULATION

Licence Applications

Applications for licence with respect to the existing radiation activities of Commonwealth departments and agencies were required to be submitted to ARPANSA by 5 August 1999. During the quarter, ARPANSA received eight applications for a facility licence and sixty-four applications for a source licence. These applications are initially being checked for completeness and will be assessed against the requirements of the ARPANS legislation and guidelines so that a recommendation can be made to the CEO on each application.

The application for a source licence submitted by Australian Defence Organisation (ADO) on 5 August 1999 was not complete in that it did not include an inventory of

the organisation's radiation sources. The matter was taken up with the ADO in writing and arrangements put in place to bring about a full application.

Facility Licence Issued

One facility licence was issued during the quarter to ANSTO to prepare a site for the replacement research reactor.

Replacement Research Reactor

In April 1999, ANSTO applied for a facility licence to prepare a site for the replacement research reactor. The CEO of ARPANSA advertised receipt of the application and invited submissions from the public about the application, as required by the Australian Radiation Protection and Nuclear Safety Regulations 1999.

This application was reviewed by ARPANSA against the *ARPANSA Draft Safety Assessment Principles for Controlled Facilities (April 1999)* and *ARPANSA Draft Criteria for the Siting of Controlled Facilities (April 1999)*. These principles and siting criteria are based on international standards and recommendations, particularly those of the International Atomic Energy Agency (IAEA), and reflect international best practice of safety assessment and nuclear regulation.

A safety evaluation report that included a complete review of the application and responses to all issues raised in the seventy-three public submissions received was prepared. This report also included conclusions on the issues to be taken into account by the CEO in making a decision on the application, as described in the Regulations, and a recommendation to the CEO in respect of that decision.

A licence to prepare a site for the reactor was issued by the CEO ARPANSA on 22 September 1999. Conditions were attached to the licence covering the safety issues related to the site that arose during the staff reviews, as well as advisory notices on issues that would require consideration during reviews of any future applications regarding the replacement research reactor. Further licences would be required for any subsequent stages of the facility (construction, possession, operation, decommissioning and abandonment). Issuing of these licences would also be subject to a review of each application against safety standards and analysis of public submissions.

A copy of the licence, attached conditions, a statement by the CEO of ARPANSA, and the safety evaluation report can be viewed on the ARPANSA internet site at www.ARPANSA.gov.au.

Transport of Radioactive Material

ARPANSA is the competent authority for the inland surface transport of radioactive material undertaken by, or on behalf of, the Commonwealth. During the quarter the CEO issued re-validations of foreign Transport Package Approval Certificates for two fissile material packages, in accordance with the Australian *Code for the Safe Transport of Radioactive Substances 1990*. These packages are to be used by ANSTO for shipment of spent nuclear fuel to France.

Safety of Australian Nuclear Science and Technology Organisation (ANSTO) Nuclear Plant

The *Australian Nuclear Science and Technology Organisation Amendment Act 1992* established the Nuclear Safety Bureau (NSB) with functions including the review and safety of ANSTO's nuclear plant. This part of the Act was repealed with the proclamation of the *ARPANS Act*. However, in the period prior to a decision being made on an application for a licence for these facilities, the CEO of ARPANSA has functions and powers to enable the safety review formerly performed by the NSB to be continued by ARPANSA.

HIFAR Incidents

ARPANSA reviewed the eleven reported abnormal occurrences at ANSTO's nuclear plant during the quarter and it was concluded that none had adverse safety implications. Six were human factors related and the remainder were due to equipment faults. ARPANSA continued to assign levels on the International Nuclear Event Scale to these abnormal occurrences, on a trial basis. Accordingly, all occurrences were assigned Level 0, i.e. of no safety significance.

Fuel Handling Incident, February 1999

In response to a request by ARPANSA, ANSTO prepared a report of the root cause analysis of the three spent fuel handling incidents which occurred in 1998 and 1999. This root cause analysis is being reviewed by ARPANSA.

A submission was also received from ANSTO concerning the modifications to the general purpose flask which are being made as a corrective action following the fuel handling incidents involving the flask. ARPANSA reviewed the submission and other documentation, discussed the proposal with ANSTO staff and witnessed the successful operation of the modified flask with a dummy load. As a result, agreement was provided, subject to a number of conditions, to use of the flask for handling HIFAR spent fuel.

Radioactive Discharges

Radioactive airborne discharges from HIFAR are reviewed by ARPANSA for compliance with the airborne discharge authorisation. During the quarter, ANSTO submitted reports for the second and third quarters of 1999 on discharge levels and calculated maximum doses to the public arising from the discharges. Levels of all discharges were less than the notification levels specified in the authorisation.

ANSTO also advised of a correction to the previously reported levels of liquid discharges from the Lucas Heights Science and Technology Centre for the first quarter of 1999, and reported the liquid discharges for the second quarter. All discharges were in compliance with the Trade Waste Agreement between Sydney Water and ANSTO.

Y2K Compliance

ARPANSA is reviewing a submission detailing the current status of ANSTO's Year 2000 compliance effort and contingency planning. Their compliance effort has relied on a combination of independent audit and testing, ANSTO testing, and supplier certification. Briefings and advice from Telstra, Energy Australia and Sydney Water, and other information were factored into ANSTO's contingency plans. An emergency response plan was produced to cover eventualities such as loss of external electricity supply, loss of water supply, loss of external communications, and a coincident bushfire with loss of water supply and communications. ANSTO intends to shutdown the reactor HIFAR before midnight on 31 January 1999, and undertake a series of tests, including verification of communications and continuity of the external electricity supply. If all indicators are positive HIFAR will be restarted. The submission also provides information on the status of other ANSTO facilities, and any special arrangements put in place.

Modifications

Agreement was given by ARPANSA to a number of safety-related modifications proposed by ANSTO to HIFAR. Some of these relate to the schedule of work to be undertaken during the major shutdown of HIFAR, commencing in February 2000.

(g) INTERNATIONAL LIAISON

Between 13 - 26 July, Dr Julian Thomson of ARPANSA accompanied an evaluation team from the Australian Customs Service to Europe to provide technical advice and guidance on megavoltage x-ray units for use in the inspection of trucks and shipping containers.

During July 1999, Mr Ron Rubendra attended a five-day course on criticality safety of nuclear operations, in New Mexico, USA. The officer then visited the US Nuclear Regulatory Commission in Maryland, and toured three nearby research reactor facilities to gain information on the regulation of nuclear installations in the US.

In August a six member delegation from the Environmental Protection Authorities of several Provinces in China visited both the Yallambie and Miranda campuses for discussions on environmental radioactivity and regulatory issues.

International Atomic Energy Agency (IAEA)

Mr Trevor Mountford-Smith attended an IAEA Technical Committee Meeting in Vienna in October 1999 and chaired one of four working groups at the meeting. The topic of the meeting was the simplification of the *Regulations for the Safe Transport of Radioactive Material*.

Mr Vince Diamond attended an IAEA International Symposium on Research Reactor Utilisation Safety and Management in Lisbon, Portugal and held a number of informal discussions with the participants of the symposium. Following the symposium, he visited the Egypt research reactor ETRR-2 and discussed a wide-range of issues relevant to the background of the ETRR-2 with the Chairman of the Egyptian Atomic Energy Authority and a representative of the Egyptian Regulatory Authority.

A number of visits and placements were undertaken as IAEA sponsored scientific visits or fellowships:

- In September a senior scientific officer from the Atomic Energy Authority of Sri Lanka commenced a two month training program at ARPANSA involving Neutron, beta and X-ray calibration;
- A State Inspector on Radiation Safety with the Nuclear Energy Commission in Mongolia spent two weeks with ARPANSA in early September for inspection training, particularly in Non-Destructive Testing industries; and
- Officers from the National Centre for Hygiene, Epidemiology & Microbiology in Mongolia, the Ministry of Health in Vietnam and the National Cancer Hospital in Sri Lanka also visited ARPANSA for discussion on a range of issues.

John Loy
CEO
31 March 2000