



AUSTRALIAN RADIATION PROTECTION AND NUCLEAR SAFETY AGENCY

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

FOR THE PERIOD 1 JANUARY TO 31 MARCH 2001



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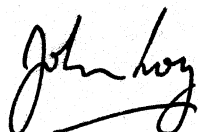
4 May 2001

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 the *Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998*, I present to you my Quarterly Report for the period 1 January to 31 March 2001.

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 a report on the operations during the quarter of the CEO, ARPANSA, the Council and Committees. Section 16 of the Act requires that the report include details of directions given by the Minister to the CEO during the quarter; any breach of licence conditions by a licensee during the quarter, of which the CEO is aware; all reports received by the CEO during the quarter from the Council and Committees; and facilities licensed under Part 5 of the Act during the quarter.

Further details about matters contained in this report are available through the ARPANSA Information Officer who can be contacted by telephone on 03 9433 2211, by facsimile on 03 9432 1835 or by e-mail to arpansa@health.gov.au.

REPORT ON PERFORMANCE

(a) UNIFORMITY OF RADIATION PROTECTION FRAMEWORKS

National Directory for Radiation Protection

The Radiation Health Committee (RHC) reviewed a restructured draft of the National Directory for Radiation Protection at its March 2001 meeting. It was agreed that the structure of the document formed a basis on which the Directory could proceed. Some areas of the draft required further work and this will occur before the next RHC meeting. Regulators would then consult on the Directory within their jurisdictions, with the aim of voting on the adoption of the Directory at a subsequent meeting.

National Competition Policy Review of Radiation Protection Legislation

The Draft Final Report for the Review was completed after incorporation of changes arising from the steering committee meeting on 2 February 2001. A round of focussed consultation was undertaken in March, wherein the review team held meetings in Canberra, Sydney, Melbourne, Hobart, Adelaide and Perth. Meetings included representatives of the radiation advisory committees or councils, organisations that made submissions on the Issues Paper, and stakeholders invited by the jurisdictions. The outcomes of the focussed consultation will be discussed with the steering committee in April, and the Report of the review will then be finalised and sent to the Australian Health Ministers Advisory Council (AHMAC) in early May.

(b) ADVICE ON RADIATION PROTECTION AND NUCLEAR SAFETY

2000 Reference Accident for Visits by Nuclear Powered Warships (NPWs)

Documentation of the Reference Accident was completed and the CEO or ARPANSA issued the report early in the quarter. This report will be used by the Department of Defence

Visiting Ships Panel (Nuclear) as the basis for assessing the acceptability of Australian ports for visits by nuclear powered vessels.

Port Validations for NPWs

Mr Ron Rubendra of the Regulatory Branch, and Mr Stephen Soloman of the Environmental and Radiation Health Branch, participated in the biennial review for re-validation of berths in the Gage Roads and Cockburn Sound for NPW visits.

Senate Electromagnetic Radiation Inquiry

On March 2 2001, ARPANSA CEO John Loy, and Wayne Cornelius of Non-Ionising Radiation (NIR) Branch gave evidence to the Electromagnetic Radiation Inquiry of the Senate Environment, Recreation, Communications, Information Technology and the Arts References Committee in relation to the ARPANSA submission.

Inquiries regarding RF emissions from mobile phones and base stations, and the reported link between ELF fields and childhood cancer

The Electromagnetic Radiation and Laser and Optical Radiation Section dealt with a number of public and media inquiries regarding radiofrequency (RF) emissions from mobile telephones handsets and base stations. Significant media attention was also generated by the United Kingdom's NRPB Advisory Group on Non-ionising Radiation Protection report of a statistical association of childhood leukemia with exposure to extremely low frequency fields (ELF) magnetic fields from power lines.

In addition to media releases on 7 March and 16 March addressing the United Kingdom report and announcing certain commitments, John Loy issued advice on the subject of ELF emissions entitled *Does Electricity Cause Cancer?* All these documents can be seen on the ARPANSA web site.

Development of Draft RF Standard

Officers of the NIR Branch spent considerable time in the development of the draft ARPANSA radiofrequency (RF) exposure Standard, as they had done in 2000. Substantial technical corrections and additions were made to the draft. In particular, an appropriate and technically rigorous protocol for spatial averaging of measured reference levels was developed. The draft titled *Radiation Protection Standard - Maximum Exposure Levels to radiofrequency fields — 3kHz to 300GHz*, was released for public comment in March 2001. The closing date for public comment was May 11, 2001. A copy of the draft is available on the ARPANSA web site at: http://www.arpansa.gov.au/rf_dft_standard.htm.

Conferences, Meetings and Publications

- Michael Bangay attended a conference entitled *Telecommunications and Local Government* in Perth on Tuesday March 13, organised by the Western Australia Municipal Association (WAMA).
- On March 22-23, several ARPANSA staff attended a conference at Coogee Beach in Sydney by the University of Sydney entitled *The Radio Frequency Spectrum: Managing Community Issues*. Wayne Cornelius gave a presentation on the development of the new ARPANSA radiofrequency (RF) exposure Standard and was also interviewed on the subject by Australian Associated Press. Michael Bangay presented data on environmental radiofrequency levels and exposure levels associated with GSM base stations in particular.
- An article covering the issue of sun protective clothing and the current requirements of the Australian Standard entitled *Sun Protection which is up to Standard*, written by Peter Gies and Peter Leate, appeared in *Pharmacy Review* (December 2000, pp. 76-77).
- Mr Peter Gies co-authored a paper entitled *Levels of ultraviolet radiation exposure among young children and the association with reported time outside* which was presented at the Sixth International Congress of Behavioural Medicine in Brisbane.
- Mr Gies co-authored a publication produced with the Anti-Cancer Council of Victoria and the Bureau of Meteorology, and submitted to the *Health Promotion Journal of Australia*, entitled *Meteorology meets public health – a novel collaboration*.
- The UVR Section also provided input to the Standards Australia draft Standard on Solaria, which is currently out for public comment. Input was also provided for the Standards Australia draft Sunglass Standard which is currently being revised and updated.
- Mr Patrick Leonard presented a paper entitled *The Australian Radiation Protection and Nuclear Safety Agency as it relates to: The Patient, the Public and the Health Professional* at the Australian Institute of Radiographers Conference in Brisbane. Mr David Tingey outlined the activities and service functions of the Medical Physics Section at the same event.

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

- Mr Michael Bangay conducted an audit of the transmitted power levels at the 'Pim-1' (transgenic) mouse study in Adelaide on April 2. Michael's work will form part of a report by Professor Barrie Vernon-Roberts.
- In collaboration with the Queensland Division of Workplace Health and Safety, the UVR Section agreed to undertake a personal exposure study of outdoor workers in the Queensland building industry using polysulphone badges. This study should commence in mid-October and finish by the end of November 2001.
- Analysis of data gathered in a national survey of radiation doses from nuclear medicine was completed in the quarter. Results indicate that the per-capita effective dose from

nuclear medicine has slightly more than doubled since the last survey was conducted in 1990. The end report will probably be finalised in July and published not long after.

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

Ultraviolet Protection Factor (UPF) Fabric Testing and Labelling

Fabric UPF testing, licensing and labelling increased slightly since the previous quarter. With 178 fabric samples tested, 13 UPF trademark licences issued and 385,000 UPF labels were issued.

EMR and Optical Radiation

There was a continuing strong demand for commercial service work including the laboratory calibration of RF monitors and probes. The number of jobs completed was 56 – this included 48 monitors, 41 probes, 4 badges and 5 other sensors.

Calibration Services

A team from the Ionising Radiation Standards Section successfully transferred the South Australian caesium-137 protection level calibration facility to new premises in Adelaide.

An electron calorimeter was purchased from the National Physical Laboratory in the United Kingdom. This equipment is being instrumented for use as an electron beam reference standard.

Environmental and Radiation Health Services

Following the completion of the rehabilitation of contaminated sites at Maralinga, the Environmental and Radiation Health Branch finalised a report entitled *Inhalation Dose Assessment for the Remediated Lands at Maralinga*.

The Branch also prepared a report for the Repatriation Medical Authority on the potential doses to Australian veterans serving in Hiroshima in 1946. Copies of the report are available from the Department of Veterans Affairs.

(e) COUNCIL AND COMMITTEE OPERATIONS

Radiation Health & Safety Advisory Council

The Council did not meet during this quarter. The next meeting is scheduled for 9 April 2001.

Radiation Health Committee

The Radiation Health Committee (RHC) met on 29-30 March 2001 at ARPANSA's Yallambie office. A summary of the meeting is at http://www.arpansa.gov.au/rhc_mt.htm.

The next meeting of the Radiation Health Committee is scheduled for 18-19 July 2001.

Nuclear Safety Committee

The Nuclear Safety Committee (NSC) visited the ANSTO site at Lucas Heights on 15 March 2001 and met on 16 March 2001 at ARPANSA's Miranda office. A summary of the meeting is at http://www.arpansa.gov.au/nsc_mt.htm.

The next meeting was scheduled for 5-6 July 2001.

Radiofrequency (RF) Exposure Standard Working Group

The RF Exposure Standard Working Group met on 23-24 January 2001 at ARPANSA's Yallambie office. The draft standard was subsequently released for a period of public comment from 2 March 2001 until 11 May 2001.

A further meeting is scheduled for July 2001 to commence considering the public comment.

(f) REGULATION

Standards

Regulatory Assessment Principles

Sixteen public comments have been received on the documents *Regulatory Assessment Principles for Controlled Facilities* and *Regulatory Assessment Criteria for the Design of New Controlled Facilities and Modifications to Existing Facilities*. A revised final version of these documents is being prepared.

A presentation on ARPANSA's application of the Regulatory Assessment Principles was given to visiting senior officers from the Vietnam Ministry of Science and the Vietnam Department of Planning.

Licensing

Application Assessment

During the quarter:

- 7 source licence applications were received.
- Combined source licences were issued to:
 - ANSTO Safety Division;

- The National Crime Authority, and
- Australian National University, Human Resources Division.
- 78 Import Permits were issued.

Fuel Operations

In October 2000, ARPANSA requested additional information from ANSTO concerning their Application for a Facility Licence for Fuel Operations. As this information had not been received by the due date, a further letter was sent during the quarter requesting a schedule for supply of the information. As at the end of this quarter, no information had been received.

HIFAR

A detailed assessment of the Application from ANSTO for a Licence to Operate HIFAR has been completed against ARPANSA's Regulatory Assessment Principles and ARPANSA's Expectations for Safety. Writing of the Safety Evaluation Report, based on those detailed assessments, is well progressed.

Moata

The Safety Evaluation Report (SER) and Licence have been undergoing the final preparation in readiness for a recommendation to the CEO of ARPANSA. Recommended Licence Conditions and for decommissioning nuclear facilities, including Moata, are being finalised.

Waste

ANSTO provided additional information in support of its licence application for Waste Operations and Technology Division (Part 4B of the Application), however a full inventory of radioactive waste had not been received by the end of the quarter.

National Medical Cyclotron Safety Evaluation Report and Draft Licence

National Medical Cyclotron (NMC) is a facility of ANSTO Radiopharmaceuticals Division used for the production of medically useful radioisotopes. The Safety Evaluation Report on the Application for NMC as Prescribed Radiation Facility has been finalised and a draft licence is being prepared.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Assessment of licence applications from 20 Divisions of CSIRO continued or was commenced. This included a detailed review of the organisational plans and arrangements for managing safety. The Safety Evaluation Report was well progressed and due for completion in the next quarter. The CSIRO Waste Storage Facility is used to store soil lightly contaminated with uranium and associated isotopes. The assessment of the licence application for this facility continued during the quarter.

Australian Customs Service

Discussions are ongoing with the Australian Customs Service regarding proposals for obtaining two Prescribed Radiation Facilities to examine shipping containers. Construction is planned for one facility in Sydney and one in Melbourne and these are expected to be operational by 2002.

Department of Defence

The Department of Defence source licence application has been reviewed and correspondence with the Defence Safety Management Agency continue to clarify safety issues arising from the ongoing ARPANSA review.

The Defence Woomera Waste Storage Facility is used to store low and intermediate level wastes arising from industrial uses of radioisotopes. The assessment of the licence application for this facility continued during the quarter.

ARPANSA staff inspected waste storage arrangements at the Bandiana and Salisbury sites.

Surveillance

Criticality

As reported in the previous quarter, a criticality audit of ANSTO was conducted and a report drafted. The draft report was sent to ANSTO during the quarter for comment on its technical accuracy.

HIFAR

Audits of the HIFAR Control Room logbook carried out the last 2 quarters were completed. There has been an improvement in the quality of the log keeping and a few minor issues have been highlighted for discussions with HIFAR Management.

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 monitoring and reviewing the safety of ANSTO's nuclear plant. This part of the Act was repealed with the proclamation of the *ARPANS Act 1998*. However, during the period prior to a decision being made on an application for 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 Abnormal Occurrences

The Regulatory Branch is notified of all Abnormal Occurrences at HIFAR. There were no Abnormal Occurrences classified as Level 1 and above on the International Nuclear Event Scale (INES), notified by ANSTO for the period 1 January to 31 March 2001. That is, there were no occurrences having safety significance.

Fuel Operations Abnormal Occurrences

The Regulatory Branch was notified of an abnormal occurrence at one of the Fuel Operations facilities during the quarter. This occurrence involved the inadvertent lowering of the water level in a pond where waste items, resulting from the cropping of spent fuel elements, are stored. The lowered water level caused a radiation monitor to alarm when the dose rate increased above normal. The occurrence report included information concerning a similar occurrence in August 2000 not reported to ARPANSA at that time. ARPANSA is investigating both occurrences.

Transport of Scrap Aluminium

During December 2000, two 200 litre drums of aluminium scrap were delivered to an off-site recycling facility where they were identified as containing some slightly radioactive items and returned to ANSTO. The measured residual radioactivity was comparable to that at which material is exempt from licensing under the ARPANSA Regulations 1998 and there were no health implications. ANSTO advised ARPANSA and provided a report. ARPANSA is satisfied with the resulting actions taken by ANSTO to upgrade its waste management systems.

HIFAR Plant and Procedure Modifications

ARPANSA reviewed and agreed to one safety-related modification during the quarter. This modification was to the Electrical Power Supply System and involved the installation of solid state inverters in the Uninterruptible Power Supply for reactor instrumentation.

Operational Limits and Conditions

ARPANSA reviewed and agreed to changes to Operational Limits and Conditions which resulted from the Replacement of the Electric Power Supply System (EPSS) Uninterruptible Power Supplies (UPS) for reactor instrumentation.

Modifications to Other Nuclear Installations

The First Stage Submission for an upgrade of the Building 23 ventilation system has been reviewed. Building 23 complex, including B23A, is a unit of ANSTO Radiopharmaceuticals Division. Building 23 consists of the main receipt and dispatch bays, the isotope handling bay and the Cobalt-60 cell. Building 23A consists of the radioisotope production laboratories including various hot cells and clean area laboratories. This upgrade is a significant change

to the Radiopharmaceuticals facility. ARPANSA agreed to the submission subject to appropriate conditions.

ARPANSA agreed to a Stage 1 submission for the proposed extension to existing waste operations and technical development facility for the construction of a waste treatment and packaging building. ARPANSA considers the proposed extensions to Building 20B are a modification of the current facilities for which a licence application has been received. ARPANSA may invite public submissions at a future stage of the modification, when the details of the proposed conducts are better defined.

Maintenance, Periodic Testing & Inspection

ARPANSA contacted ANSTO in respect of alterations to HIFAR maintenance, testing and inspection due to extension of to the length of HIFAR Operating Programs. The response from ANSTO is under review.

Transport of Spent Fuel

During the quarter, ARPANSA provided approval of ANSTO's transport plan for movement of the shipment of spent research reactor fuel in five transport casks from Lucas Heights to Port Botany. As reported previously, ARPANSA, in its capacity as the Competent Authority for transport of Commonwealth-owned radioactive material by road and rail, issued re-validations of the design approval certificates of foreign-owned transport casks being used by ANSTO, and gave approval to the loading of all the casks, prior to the shipment.

Replacement Reactor Site Licence

ARPANSA reviewed ANSTO's compliance with the site licence based upon the quarterly reporting requirement. All licence conditions continued to be met by ANSTO.

Replacement Reactor – Design, Construction and Commissioning

ARPANSA has commenced planning the review of the anticipated application by ANSTO for a licence to construct the proposed replacement reactor. It is anticipated that the Application will be lodged on 18 May 2000. A core project team has been established to coordinate the review process. Lead review officers have been nominated for particular parts of the application.

ARPANSA continues to hold regular meetings with ANSTO to discuss the next stage of the replacement reactor project.

ARPANSA officer Mr Vince Diamond visited Argentina in February 2000 for discussions with the Argentine Nuclear Regulatory Authority (ARN) on the regulation and assessment of research reactors. In order to gain insight into the ANSTO design review process for the Replacement Research Reactor, the opportunity was taken to observe the ANSTO/INVAP Design Review Process, and to visit some laboratories where related development work is undertaken. Mr Diamond also observed an independent Quality Assurance audit of INVAP's

design process commissioned by ANSTO. The knowledge gained from the visit should prove very beneficial for ARPANSA's review of the Construction Licence Application for the replacement reactor.

The Head of the IAEA Safety Engineering Section visited ARPANSA from 26 to 28 March. Discussions took place on aspects of the independent technical peer review of the Preliminary Safety Analysis Report to be submitted by ANSTO with the Application for a Licence to Construct. A preliminary schedule for the review process was established, with an international peer review team expected to conduct their review in Australia from 28 May to 8 June and a final report is expected to be available by the end of July 2001.

Radioactive Discharges

The reported radioactive airborne discharges from HIFAR were reviewed by the ARPANSA Regulatory Branch and found to comply with the airborne discharge authorisation issued by ARPANSA. All discharges were less than the notification levels specified in the authorisation corresponding to ANSTO's ALARA (as low as reasonably achievable) objective of 20 microsieverts annually.

ANSTO reported liquid discharges from the Lucas Heights Science and Technology Centre. These were reviewed by the ARPANSA Regulatory Branch and found to comply with the Trade Waste Agreement between Sydney Water and ANSTO. This agreement limits concentrations of radioactive materials at the ANSTO discharge point to ensure compliance with the World Health Organisation Guidelines for Drinking Water Quality (1993) at the Cronulla Sewage Treatment Plant. ARPANSA is satisfied that adequate radiation protection is provided for sewerage workers and the public.

(g) INTERNATIONAL LIAISON

International Atomic Energy Agency (IAEA)

A Regulatory Branch Officer attended the annual meeting in Vienna of the IAEA Transport Safety Standards Committee. The committee oversees and advises on the IAEA publications relating to the safe transport of radioactive materials and various other aspects of the IAEA's transport safety program. The main work of the committee at this meeting was consideration of the recommendations of the Technical Committee reviewing submitted proposals to change the Agency's regulations for the Safe Transport of Radioactive Material.

Mr Julian Thomson of the Medical Radiation Branch attended the IAEA international conference – *Radiological Protection of Patients in Diagnostic and Interventional Radiology, Nuclear Medicine and Radiotherapy*. More than 1000 delegates attended the conference, which dealt with protection of the patient from all modalities of diagnostic radiology and nuclear medicine.

Comprehensive Test Ban Treaty

Mr Peter Burns attended a workshop in Aldermaston England in January on radionuclide monitoring to support the Comprehensive Test Ban Treaty. The workshop titled *CTBTO Radionuclide Workshop* lasted for one week. Mr Burns also attended a meeting of Working Group A (Verification) of the Preparatory Commission for the Comprehensive Nuclear Test Ban Treaty in Vienna in February.

Nuclear Energy Agency (NEA)

Mr Daniel Westall attended a 2-day workshop in Villigen, Switzerland, on *Better Integration of Radiation Protection in Modern Society*. The workshop heard of experiences in stakeholder involvement in radiation and nuclear issues and discussed the relationships between stakeholders, experts and decision-makers. Mr Westall also visited the Swiss Federal Nuclear Safety Inspectorate and discussed public consultation on regulatory decisions about research reactors and radioactive waste facilities, and processes for informing the public about radiation protection and nuclear safety issues.

John Loy
CEO
4 May 2001