



**Australian Government**

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**Australian Radiation Protection  
and Nuclear Safety Agency**

**QUARTERLY REPORT**

**OF THE**

**CHIEF EXECUTIVE OFFICER**

**OF ARPANSA**

**FOR THE PERIOD 1 OCTOBER TO 31 DECEMBER 2004**





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## **CONTENTS**

<b>Contents</b>	<b>iii</b>
<b>Letter of Transmittal</b>	<b>4</b>
<b>Part 1 – Report on the operations of the CEO and ARPANSA</b>	<b>5</b>
<b>Part 2 – Report on the operations of the Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear Safety Committee</b>	<b>15</b>
<b>Part 3 – Reports required by subsections 60 (2), (3), (4) and (5) of the ARPANS Act</b>	<b>20</b>
<b>Appendix A – Regulatory Operations</b>	<b>23</b>
<b>Appendix B – Service Operations</b>	<b>39</b>

## LETTER OF TRANSMITTAL

2 March 2005

The Hon Christopher Pyne MP  
Parliamentary Secretary to the Minister for Health and Ageing  
Parliament House  
Canberra ACT 2600

Dear Parliamentary Secretary

The *Australian Radiation Protection and Nuclear Safety Act 1998* (ARPANS Act) requires the Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency to submit to the Minister, at the end of each quarter, a report on the operations during the quarter of the CEO, ARPANSA and the Council and Committees constituted under the Act.

The quarterly report is also to include details of any direction 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; all reports received by the CEO from the Radiation Health and Safety Advisory Council and the Nuclear Safety Committee under certain sections of the Act; and a list of facilities licensed under Part 5 of the Act.

The present report fulfils this requirement for the December quarter 2004.

This is the second report in the new format. I hope that the revised structure has allowed you and the Parliament to more readily review the operations of myself, ARPANSA, the Council and Committees during the quarter while still providing a good deal of detail on our regulatory activities.

Section 60(6) of the Act requires that you cause a copy of the report to be laid before each House of the Parliament within 15 sitting days of the day on which this report was given to you.

Yours sincerely

**John Loy**

**CEO of ARPANSA**

## **Part 1 - Report on the operations of the CEO and ARPANSA (paras 60(1)(a) and (b) of the ARPANS Act 1998)**

### *1. Knowledge, information and services*

#### **Medical radiation**

- 1.1 Five staff attended the annual conference of Engineering and Physical Sciences in Medicine (EPSM 2004) held in Geelong on 10-14 November. They presented two papers (*Uncertainties in Megavoltage Photon Calibrations when Adopting IAEA TRS-398* and *A TLD Therapy Dosimetry QA Program for Australia 2002-2003*). After the conference, Dr Hugo Palmans from the National Physical Laboratory (UK) visited ARPANSA to further discuss the uncertainties and differences from earlier protocols that arise from the implementation of the IAEA TRS-398 protocol.

#### **Radiation in the Environment**

- 1.2 Staff of the Radioanalytical Service attended the General Radiation Safety Officers Course over three days in September.
- 1.3 ARPANSA hosted the 1st Annual Melbourne Workshop on Radiochemistry Techniques – Alpha Spectrometry November 8-12, 2004. The 17 participants from 7 organisations were all hands-on users of alpha spectrometry techniques. The format combined a 3 day training component provided by Dr. Larry Burchfield of the Radiochemistry Society and 2 days of presentations. The presentations covered a range of topics from aspects in sample preparation, optimisation of detector systems and applications in environmental measurements. A valuable aspect of the Workshop was the opportunity to exchange information on methods and techniques as well as accessing the knowledge and experience of the participants. The relationships developed will ensure that participants will continue to use each other as a resource until the 2<sup>nd</sup> Annual Radiochemistry Techniques Workshop. In appreciation of her organisation of the Workshop the Radiochemistry Society presented Liesel Hardege with their Presidential Award, 2004.
- 1.4 In December, as part of a solubility in lung fluid project a field trip was held to the Beverly Mine in South Australia. Samples were obtained from bores in the area and also from the Paralana Hot Springs.
- 1.5 Work continued on modelling of naturally occurring radioactive material (NORM) releases and of the remediation benefits for sites contaminated by extractive industries. As part of this, a staff member attended a meeting of the IAEA's Environmental Modelling for Radiation Safety (EMRAS) working group on remediation of sites with radioactive residues in Vienna in November.
- 1.6 ARPANSA is participating in the IAEA Co-ordinated Research Project on "Application of Safety Assessment Methodologies for Near Surface Disposal Facilities". During a meeting held in Vienna in December the working group for the project discussed

progress of the project, provided comment on drafted documents and further developed the group's position papers.

## **Non-ionizing radiation**

### *Ultraviolet Radiation (UVR)*

- 1.7 The UVR exposure collaborative study with the Menzies Centre for Population Health in Hobart and the National Centre for Epidemiology and Population Health at the Australian National University in Canberra continued, with the final summer phase of UVR exposure assessments of people with multiple sclerosis being undertaken. Phase three research into the UVR exposures of Australia Post outdoor workers was conducted in Brisbane during December. A pilot study of the solar UVR exposures of Antarctic expeditioners and ship based workers was initiated in December.
- 1.8 Research into protection against solar UVR continued. A collaborative study with the Cancer Council of Australia into the effectiveness of school hats against solar UVR began in November. The study uses UV-sensitive polysulphone film dosimeter badges. A joint study with the Waite Institute of the University of Adelaide into the effectiveness of different tree species in providing UVR protection commenced in October. Finally, a collaborative project comparing spectral measurements of solar UVR in Melbourne for 2001-2003 made by ARPANSA and the Australian Bureau of Meteorology continued, with further meetings to progress the analysis of results and the drafting of a paper.
- 1.9 Requests for information and data on UVR measurements and protection were received from several State Cancer Councils and other organisations. UVR Section staff also provided further input on solar UVR levels for the draft Vitamin D position statement to be released by the Australian and New Zealand Bone and Mineral Society. UVR section staff gave presentations on UVR hazards and ARPANSA services at the LABCON 2004 Conference at Monash University.

### *Electromagnetic Radiation (EMR)*

- 1.10 Results from a survey of electromagnetic radiation (EMR) levels around 60 mobile telephone base stations were presented at the annual Energy Suppliers Association of Australia Scientific Forum in October and to the Mobile Carriers Forum. The latter forum provided significant funding for the survey but the survey was independently conceived, designed, conducted and analysed by ARPANSA. A paper on the results of the survey has been submitted to an international journal.
- 1.11 EMR section staff continued to provide information to the public and media regarding EMR and health – as did ARPANSA's Public Affairs Officer. ARPANSA and the Australian Communications Authority (ACA) cooperated on providing a new public information portal on the ACA web site.
- 1.12 A pilot study of 50 Hz magnetic fields in Victorian homes was completed. The survey examined the different ways of recruiting volunteer householders and obtained

information about the time necessary for, and the usefulness of, different kinds of measurements. The results will be published in a journal and as an ARPANSA technical report. They are being used in the planning of the full-scale study of 300 homes in Victoria during 2005.

- 1.13 A paper on Mobile Telephony and Children by EMR staff was published in the journal of the Australasian Radiation Protection Society.
- 1.14 Staff presented an overview of knowledge about mobile phones, power lines and health at the LABCON conference held at Monash University in September.

## **Services**

- 1.15 The Personal Radiation Monitoring Service (PRMS) Application Development Project continued during the quarter. The Proof of Concept phase was completed in December. One output from this phase was a Detailed System Specification which provides the Statement of Work for the remainder of the project.
- 1.16 A Statement of Requirement for the redesign of the monitor holder used in the PRMS was prepared so that Expressions of Interest can be sought from companies with expertise in designing such devices.
- 1.17 An ARPANSA publication, *Personal Radiation Monitoring and Assessment of Doses received by Radiation Workers (2004)*, June 2004, Technical Report 139, by three PRMS staff was produced for issue to clients of the service.
- 1.18 The PRMS was invited by the IAEA to participate in the Intercomparison on Measurements of the Quantity Personal Dose Equivalent  $H_p(10)$  in Mixed (Neutron-Gamma) Fields. Twenty neutron monitors have been exposed by the IAEA and returned for evaluation. The results are expected next quarter.
- 1.19 Statistics on the outputs of other ARPANSA services are at Appendix B.

## ***2. National leadership in radiation protection and nuclear safety***

### **Comprehensive Test Ban Treaty - radionuclide monitoring**

- 1.20 As part of Australia's commitment to the Comprehensive Test Ban Treaty, ARPANSA continued to operate and maintain radionuclide air monitoring stations at Melbourne, Perth, Townsville, Darwin, Cocos Islands and Kavieng in PNG. Discussions continued with government agencies for the installation and support of stations at Macquarie Island and at Mawson, Antarctica. Discussions also continued with regard to finalising the Model Contract with the CTBTO, and establishing a memorandum of understanding with ARPANSA's subcontractor in PNG. To reduce costs, the CTBTO has agreed to ARPANSA's proposal to merge the detector location with the sampler location for the stations at Townsville and Perth. Work is expected to begin in early 2005.
- 1.21 ARPANSA also operates the Australian Radionuclide Laboratory, which has the role of

testing samples obtained by other monitoring stations. The laboratory underwent certification visits from the National Association of Testing Authorities (NATA) and the CTBTO in 2004. The laboratory has been awarded formal certification by NATA, showing that it complies with ISO/IEC 17025 (1999). Certification by the CTBTO has been delayed pending resolution of a key technical issue. In an attempt to resolve this, a new radionuclide detector has been ordered.

- 1.22 ARPANSA continues to maintain a National Data Centre that provides advice to the Australian Safeguards and Non-Proliferation Office (ASNO) on any event detected by the CTBT radionuclide network that may be indicative of a nuclear weapon test explosion.

### **National Uniformity**

- 1.23 The cost-benefit analysis for the National Directory for Radiation Protection (Edition 1) was completed during the quarter, and was agreed by all jurisdictions as meeting their requirements. A final regulatory impact statement based on this analysis will be prepared.
- 1.24 The National Uniformity Implementation Panel (Radiation Control) (NUIP(RC)) discussed proposals for Edition 2 of the Directory at its meeting on 11 November.
- 1.25 The NUIP(RC) recommended that the National Competition Council be advised that the NCP review projects had been completed.
- 1.26 During December, NUIP(RC) members finalised for public comment the criteria to exempt radioactive material or practices from regulatory notification, registration and licensing. This exemption criteria would be included in Schedule 4 of the National Directory for Radiation Protection.
- 1.27 The *Recommendations for intervention in emergency situations involving radiation exposure* was published in the quarter as Radiation Protection Series No 7.

### **Source Security and Emergency Response**

- 1.28 Work continued to enhance the security of radioactive sources in Australia, and the associated emergency response capabilities in the event of radiological incidents. Implementation of the approved business plan for the project began in the quarter, with recruitment action undertaken for two additional specialist positions – a security compliance officer and an emergency response co-ordinator.
- 1.29 Various radiation monitors were assessed for their suitability for field use, particularly in the detection of neutrons. This equipment could enhance ARPANSA's capacity to conduct measurements and support State plans following a radiation emergency.
- 1.30 The working group developing the *Code of Practice for the Security and Physical Protection of Radioactive Sources* met and drafted the first version of the document, which is planned to be available for public consultation in the autumn of 2005. Work on the database of high activity sources continued, with an information technology officer attending a meeting in Vienna on possible modification of an existing database

to satisfy Australia's needs. Discussion continued with Customs on the implementation of enhanced import and export controls for radioactive sources.

- 1.31 An on-call radiation team and monitoring arrangements were put in place for the visit of a nuclear powered aircraft carrier visited Perth in October. ARPANSA hosted and participated in a meeting of the Technical Committee of the Visiting Ships Panel (Nuclear).
- 1.32 During the quarter, ARPANSA provided expert advice on radiation protection and health physics issues to a number of bodies as part of Australian planning for radiological terrorism.
- 1.33 In December, ARPANSA took part in a teleconference of the National Competent Authority Steering Group for the implementation of the IAEA Action Plan for *Strengthening the international preparedness and response system for nuclear and radiological emergencies*.

### **International Activities**

- 1.34 ARPANSA officers represented Australia at the IAEA Radiation Safety Standards Committee (RASSC) meeting and the IAEA Waste Safety Standards Committee (WASSC) held in Vienna. The RASSC develops international radiation safety publications for the IAEA. It finalised drafting of the Safety Guide on Categorisation of Radioactive Sources (DS343) and approved several other documents for member state comment. During its meeting the WASSC held a joint meeting with the IAEA Waste Technology Committee. Areas of joint interest discussed included the safe and cost-effective application of the borehole disposal concept, the safety and security aspects of long-term storage which appears to be becoming waste management strategy in its own right, and a common glossary of terminology.
- 1.35 A staff member presented a lecture on the control of radioactive sources in Australia at a three-day Regional Training Course on the Physical Protection of Nuclear Installations from 4-12 October in Mumbai, India.
- 1.36 In its role as a World Health Organisation (WHO) Collaborating Centre, ARPANSA attended the 10<sup>th</sup> WHO Coordination Meeting of the WHO Collaborating Centres in Radiation Emergency Medical Preparedness and Assistance Network (REMPAN), held at the All-Russian Centre of Emergency and Radiation Medicine, St Petersburg, on 13-15 October.
- 1.37 Two staff attended the annual General Assembly of the Asia Pacific Metrology Program held in Beijing, China, from 18-22 October. On the first two days, the Technical Committee for Ionizing Radiation held a workshop chaired by one staff member. Reports from eight laboratories were presented and the programs for comparison of national radiation measurement standards were discussed. Progress in the submission and review of calibration and measurement capabilities (CMCs) to the global Mutual Recognition Arrangement was reviewed.
- 1.38 The Non-Ionizing Radiation Branch Director, Dr Colin Roy, participated in a World Health Organisation (WHO) Task Group in Geneva, Switzerland, to finalise a WHO

Environmental Health Criteria book on static fields. Final agreement was reached on text and recommendations, and publication is expected in about mid-2005.

- 1.39 A staff member attended the third International Workshop on Biological Effects of Electromagnetic Fields in Kos, Greece, and presented a paper comparing the measured levels of EMR in the vicinity of mobile phone base stations with the levels obtained through common prediction methodology.
- 1.40 In November, a staff member attended and chaired the First Coordinating Meeting of the IAEA International Project on Safety Assessment Driving Radioactive Waste Management Solutions (SADRWMS), held in Vienna. At this meeting, working plans were finalised and the objectives, memberships and methods of working of the various SADRWMS working groups were agreed.
- 1.41 A staff member attended the International Symposium on Disposal of Low Activity Radioactive Waste held in Cordoba, Spain, in December 2004. Conference participants discussed the latest developments in the disposal of low activity radioactive waste in the international community.
- 1.42 A staff member represented Australia at the annual meeting of the OECD Nuclear Energy Agency's Committee on Nuclear Regulatory Activities (CNRA) and Committee on Safety of Nuclear Installations (CSNI) in November-December. The officer also held discussions about research reactors with officers of the Institute de Radiation et de Surete Nuclear (IRSN) in Paris, on 3 December. Also, on 6-7 December, he visited the Egyptian Atomic Energy Agency (EAEA) and, in particular, their multi-purpose 20 MW research reactor ETRR-2 to discuss experience with commissioning and operation. This research reactor was designed, constructed and commissioned by INVAP SE, the prime contractor for the Australian Opal research reactor.
- 1.43 The CEO took part in a meeting of the IAEA Commission on Safety Standards in November and also chaired a programme committee designing an international conference on the safety and security of radioactive sources.

### *3. Effective regulation of the Australian Government for radiation protection and nuclear safety*

#### **ANSTO Replacement Research Reactor - Application for an Operating Licence (F0157)**

1.44 On 1 December 2004, the CEO issued a media release inviting public submissions on this Application by ANSTO. He indicated that the material made available to the public to inform the submissions was not the complete version the Application since ANSTO requested that he did not publish parts of the Application on the grounds that certain information could compromise the security of the reactor and that some other details are commercial-in-confidence. The CEO continues to discuss with ANSTO the classification of material in the Application and, on this basis, the scope of information that can be made available for public release

#### **ANSTO – Replacement Research Reactor – Construction Licence (F0118)**

1.45 ARPANSA continued to monitor the construction of the replacement research reactor. Officers met regularly with their counterparts to assess the thoroughness of the ANSTO design review process. ANSTO submitted six further requests for approval by the CEO for construction of safety items during the reporting period. One of these covered the installation of the Reactor Control and Monitoring System. During the reporting period, five requests were approved by the CEO, two of which were submitted by ANSTO in the previous quarter.

1.46 The great majority of items important for safety have now been approved for construction by the CEO under Regulation 54 and Licence Condition 4.6.

1.47 ARPANSA continued inspections to monitor compliance with the construction licence for the Replacement Research Reactor. These inspections were of mainly four types:

- a) inspections of documentation and processes in sub-contractors premises for the manufacture of items important to safety;
- b) unannounced inspections of the construction site to monitor progress of the construction and installation of plant and general 'housekeeping' issues;
- c) inspection of construction hold points specified by the CEO of ARPANSA
- d) inspection of documentation and processes for activities in pre-commissioning of various safety category 1 and 2 systems or components.

1.48 On 4-6 October 2004 an expert consultant for ARPANSA, TUV Industrie Service GmbH, carried out an inspection of construction of the Cold Neutron Source Thimble at the Russian fabricator's St Petersburg facilities. The inspection was part of a Licence Condition imposed by the CEO of ARPANSA and found that the Quality System and the construction facilities of the Russian manufacturers were of a high standard. This

gives confidence to the CEO that the Thimble will be constructed in accordance with the high quality requirements indicated in the design. A second audit by the expert is scheduled in Russia in early 2005 to inspect the constructed item prior to its shipment to Australia.

- 1.49 After review and discussion of documents submitted by ANSTO dealing with its approach to the 'cold' commissioning of the replacement research reactor (ie without nuclear fuel), the CEO advised ANSTO that he proposed to amend Licence Condition 4.7 covering the Cold Commissioning activities. The amended condition would require approval of an overall commissioning program, rather than approval by individual item. The licence condition also requires ANSTO to provide additional information about specific items identified by the CEO. This approach will enable a more efficient and effective monitoring of the Cold Commissioning activities by ARPANSA.

### **ANSTO's operating nuclear installations**

- 1.50 ANSTO provided a root cause analysis of the contamination of a maintenance worker that occurred during the HIFAR major shutdown (reported in the January-March quarter). The analysis is currently being reviewed by ARPANSA officers and the outcome of the review will be reported in the March 2005 Quarterly Report.
- 1.51 ARPANSA officers investigated an abnormal occurrence, reported by HIFAR, involving the unintended partial draining of the primary coolant from the reactor while shutdown during maintenance of a valve. The reactor remained safe and there was no threat of contamination of personnel as all coolant remained contained within the coolant circuits. ARPANSA officers have formed some preliminary views as to possible causes of the occurrence that may require attention by ANSTO. These matters fall into categories of safety management, operator training and response to unexpected events. The CEO has written to ANSTO advising of these preliminary views and requested further information from ANSTO .
- 1.52 The seventh shipment of spent nuclear fuel to COGEMA occurred during the final quarter of 2004. A total of 276 spent fuel elements were packed into five specially designed and approved transport casks, and transported under police escort on five-flat top trucks to Port Botany for loading onto the purpose built ship. Australian approval certificates were issued by ARPANSA for the use of the specially designed and approved transport casks, and a separate approval certificate was issued by ARPANSA for the transport arrangements, once satisfied that the appropriate risk assessments, transport plans and emergency response arrangements were in place.
- 1.53 ARPANSA conducted background radiation measurements along the roads used by ANSTO to transport the spent fuel shipment in November, both before and after the convoy of vehicles had driven to Port Botany. A comparison of the two sets of data gathered showed that the background radiation levels did not vary over the route taken.

## **ANSTO - Review of Compliance with Organisational Special Licence Conditions**

1.54 An ARPANSA review of ANSTO's compliance with the special licence conditions (Part 2.3 of the ANSTO Handbook) applying to all ANSTO licences was completed. With the exception of one condition, compliance with all licence conditions was demonstrated. Partial compliance was demonstrated with the final condition and the decision was taken to manage further compliance at the facility level. Consequently the special licence conditions in Part 2.3 of the ANSTO Handbook were removed and an amendment made to the Radiopharmaceuticals Facility Licence to add another special licence condition.

### **Compliance Monitoring**

1.55 ARPANSA continued to develop its compliance monitoring framework within the quality management system.

1.56 The *ARPANSA Regulatory Principles* and *Regulatory Compliance Policy* were issued and the *Regulatory Inspection Policy* and *Inspection Procedure* were reviewed and reissued. The revised documents can be found at <http://www.arpansa.gov.au/inspect.htm>.

1.57 A number of procedures and forms relating to the use and maintenance of radiation monitoring instruments were also issued during the quarter.

### **Inspections for compliance monitoring**

1.58 ARPANSA continued an active program of inspections to determine compliance with licences issued under the ARPANS Act during the quarter. The following inspections were undertaken:

- ANSTO Replacement Research Reactor
- ANSTO Fuel Operation
- ANSTO Waste Operations and Technology Development
- Australian Defence Force:
  - HMAS Stuart,
  - RAAF Amberley Non-destructive Testing and Non-Destructive Testing Standards Laboratory,
  - RAAF Amberley Radioactive Waste Store
- Australian Crime Commission
- Australian Securities and Investment Commission
- Family Court of Australia (Adelaide)

- Federal Court of Australia
- National Museum of Australia
- Department of Foreign Affairs and Trade
- CSIRO Entomology (Canberra)
- Note Printing Australia (Melbourne)
- Australian Postal Corporation (NSW)

1.59 On a number of these inspections, the inspectors found that there may be minor non-compliances with licence conditions and these were taken up with the licence holders (see Part 3 of this report).

### **Details of Regulatory Activities**

1.60 Further details of regulatory activities are at Attachment A.

## **4. Corporate Management**

1.61 ARPANSA's review of its Chief Executive Instructions examined the impact of changes to the *Financial Management and Accountability Act 1997*, Financial Management Regulations 1997 and Financial Management and Accountability Orders 1997 on the existing Instructions. In addition, the Finance Circular No 2004/15 in relation to the content of the Chief Executive Instructions has provided guidance to the review. Key amendments have now been reflected in revised drafts of the Instructions which are being prepared for future consultation in the next quarter.

1.62 The ARPANSA Audit Committee held its second meeting this financial year on 30 November. The Audit Committee considered matters associated with the Australian National Audit Office (ANAO) audit of ARPANSA's licensing performance, the business continuity management plan and reports from the Chief Finance Officer, the Legal Advisor and the internal Auditor. The Committee proposed a review of the risk management plan to take account of the outcomes of the recent fraud assessment and include a renewed focus on business continuity.

## **Part 2 - report on the operations of the Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear Safety Committee (para 60(1)(c) of the ARPANS Act 1998)**

### **Radiation Health and Safety Advisory Council**

- 2.1 The Council met on 25-26 November. A summary of the meeting is available at [http://www.arpansa.gov.au/rhsac\\_mt.htm](http://www.arpansa.gov.au/rhsac_mt.htm).
- 2.2 On 25 November Council was provided with a presentation and discussion on ANSTO activities by Dr Ian Smith (Executive Director) and Dr Ron Cameron (Chief of Operations). Council visited the Replacement Research Reactor construction site and the low level waste storage, handling and conditioning facilities.
- 2.3 On 26 November Council met at ARPANSA's Miranda offices and considered the following matters:
  - An update on action following the incidents at ERA's Ranger Uranium Mine. A safety audit of clearance procedures and other radiation protection arrangements was being undertaken by ARPANSA, and an audit of engineering issues by ANSTO.
  - A letter from the ANZ Bone Mineral Society regarding the necessity for ethics committee approvals for performing duplicate DXA scans. Council noted this as a matter for State regulators rather than Council.
  - The 2005 draft Recommendations of the International Commission of Radiological Protection. Council noted this draft along with the issues arising in comment on ICRP 2005 being prepared by the IAEA, and the Radiation Health Committee (RHC). Council noted that five foundation documents supporting the recommendations were to be published by about March 2005, and that it was now expected that the new Recommendations would not be finalised until 2006, after a second round of comment. Council considered that justification remained a fundamental radiation protection principle, even if responsibility for judging justification had changed. Council also commented that the proposed policy on the environment appeared to be headed in the right direction, noting that there was much further work intended in this area.
  - The report of the UK Committee Examining Radiation Risks of Internal Emitters (CERRIE).
  - An overview of progress on security of sources and implementing the Code of Conduct in Australia.
  - The issues in the seven submissions received so far on the NORM discussion paper.
  - Council agreed that the visit to the ANSTO Replacement Reactor site and waste

handling/conditioning facilities had been worthwhile, and noted the current status of the construction, and that ARPANSA was moving to consider commissioning and the application for an operating licence.

- The CEO requested that Council examine emerging issues in radiation protection, looking forward about ten years in the medical radiation field in particular. Council noted that technology, particularly CT, was advancing rapidly, and considered that it would be valuable to have a leading radiologist, nuclear medicine specialist and medical physicist give presentations to Council on their views of potential issues at its April 2005 meeting.
- Council agreed to advise the CEO to adopt and publish the *Recommendations for Intervention in Emergency Situations Involving Radiation Exposure*.
- Reports from the CEO and the RHC November 2004 and NSC October 2004 meetings were discussed, along with a draft RHC paper on classification of radioactive waste and a draft RHC statement on cosmic radiation.
- The joint questionnaire on radiation protection in cardiology had now been agreed by the Cardiac Society and arrangements for the pilot trial at a limited number of centres had commenced.
- Information on tasers. Council agreed that it was not within its terms of reference to make recommendations on these devices.
- Issues being considered in the development of edition 2 of the National Directory for Radiation Protection, including an ARPANSA sponsored conference on radiation protection in mining and mineral processing in April 2005, and the approach taken to preparation of regulatory impact statements for the Directory and Codes of Practice.

## **Radiation Health Committee**

- 2.4 The RHC met on 10-11 November. A summary of the meeting is available at [http://www.arpansa.gov.au/rhc\\_mt.htm](http://www.arpansa.gov.au/rhc_mt.htm).
- 2.5 Following the meeting, the Committee finalised a statement on *Occupational exposure to cosmic radiation from airflight*. A copy of the statement can be found at [http://www.arpansa.gov.au/rhc\\_stat.htm](http://www.arpansa.gov.au/rhc_stat.htm).
- 2.6 At the meeting, the Committee considered the following matters:
- Comments on the 2005 draft Recommendations of the International Commission of Radiological Protection. The comments considered the basis for the proposed changes, implications for regulators on the implementation of the changes, the impact of the proposed changes and whether there would be a net benefit.
  - A draft RHC statement and a public information paper which set out information regarding exposure to cosmic radiation of commercial aircrews and people who fly frequently.

- The revised draft *Recommendations for intervention in emergency situations involving radiation exposure* for approval, and the responses to the second round of public comment. With regard to iodine prophylaxis for children, the Committee focussed on the need for the entire emergency response to all doses to be optimised. The majority of members approved that the Recommendations should proceed to the Radiation Health and Safety Advisory Council.
- An import/export regime for sources that will be introduced from 31 December 2005 as part of the implementation of the Code of Conduct on the Safety and Security of Radioactive Sources. Changes to the Customs Regulations were being prepared.
- A draft paper on arrangements for the certification (accreditation) of personal radiation monitoring services following consultation with the National Association of Testing Authorities (NATA). A revised draft of the paper will be considered for inclusion in the next edition of the National Directory for Radiation Protection and will undergo regulatory impact analysis as part of that process.
- An approach for the management of radioactive waste by the Commonwealth, States and Territories following the abandonment of proposals for national radioactive waste facilities. The Committee formed a working group to develop the inventory format and management pathway.
- Release of the draft *Code of Practice and Safety Guide for radiation protection in diagnostic and interventional radiology* for public comment subject to the completion of a regulatory impact statement. The Committee agreed that following incorporation of changes made at the meeting, the development of the publication should proceed as proposed by the working group.
- Revision of the draft *Code of Practice for the exposure of humans to ionizing radiation for medical research purposes* following consideration of public comments. The Committee accepted the revisions to the draft and agreed that its Business Working Group would consider the finalised responses to public comments. A revised regulatory impact statement will be required before the draft is forwarded to the Radiation Health and Safety Advisory Council.
- A proposal to colour code the packaging for radiopharmaceuticals in the draft Code of Practice for radiation protection in nuclear medicine as a means of further reducing the possibility of maladministration. The Committee agreed to write to the Therapeutic Goods Administration regarding the proposal and current labelling requirements.

2.7 Other matters considered by the Committee at the meeting were:

- Revised advice on shallow burial of radioactive waste for the working groups developing the Safety Guide for the Predisposal Management of Radioactive Waste and the Transport and Competent Authorities Working Group;
- Proposals for an annual summary from the Australian Radiation Incident Register. The Committee agreed that summaries would be considered in the first quarter of each year;

- An overview of the first draft of the standard for limiting exposure to extremely low frequency electric and magnetic fields (0Hz-3kHz) including the basis of the values for basic restrictions and reference levels, and guidance levels for magnetic fields below 0.1 Hz;
- A revised draft classification system for radioactive waste for use in the development of other radioactive waste matters;
- A paper titled *Exemption, Clearance and Radioactive Waste* compared the activity and activity concentration limits for major radionuclides as set out in international documents. This will enable limits to be set for user disposal and near-surface codes;
- The draft *Code of Practice for the Pre-disposal Management of Radioactive Waste* and an early draft of the accompanying Safety Guide;
- Restructure of the draft standard for occupational exposure to ultraviolet radiation; and
- The addition of a representative from the New Zealand regulator (National Radiation Laboratory) to the working group drafting the code of practice for the security and physical protection of radioactive sources.

### **Nuclear Safety Committee**

- 2.8 The NSC met on 5 November in Sydney. A summary of the meeting is available at [http://www.arpansa.gov.au/pubs/nsc/nsc\\_jun04.pdf](http://www.arpansa.gov.au/pubs/nsc/nsc_jun04.pdf).
- 2.9 The Committee was requested to provide advice to the CEO relating to aspects of the Replacement Research Reactor (RRR) operating licence application received by ARPANSA on 13 September, with particular reference to the adequacy of:
- The plan for maintaining effective control of the facility in Part B of the application; and
  - Conduct of operations in Chapter 13 of the Safety Analysis Report.

In order to provide the advice, the Committee was asked to address:

- Organisational structure, safety management systems, lines of communication, delegations, accountabilities and resource requirements;
  - Roles, responsibilities and authorities, and associated competency requirements; and
  - Qualifications, training and accreditation processes for personnel.
- 2.10 The Committee received a briefing from ANSTO personnel relating to the RRR operating licence application. Following the briefing, the ANSTO personnel answered questions of the Committee relating to:

- The waste management plan and how the RRR would be operated so as to minimise waste;
- A switch to U-Mo fuel, expected to occur early in the next decade;
- The documentation of problems encountered during the construction phase;
- Training of ANSTO staff in the operation of the RRR;
- The terminology contained in the Radiation Protection Plan; and
- The facility emergency plan and how it fits in with off-site agencies.

2.11 Other matters considered at the meeting were:

- Consideration of its paper on the decommissioning of HIFAR;
- A progress report on construction of the RRR;
- A summary of the proposed 2005 ICRP Recommendations and how it was expected that they would impact on the Australian radiation protection scheme.

## **Part 3 – Reports required by subsections 60 (2),(3),(4) and (5) of the ARPANS Act 1998**

### **Details of directions given by the Minister under section 16**

3.1 No section 16 directions were given during the quarter.

### **Details of any breach of licence conditions by a licensee during the quarter, of which the CEO is aware**

3.2 Inspections of the following licence holders conducted during the quarter identified potential non-conformances with licence conditions:

- Australian Defence Force (S0042)
- CSIRO Plant Industry (S0021)
- CSIRO Livestock Industries (S0022)
- Australian Crime Commission (S0034)
- Australian Securities and Investment Commission (S0129)
- Family Court of Australia (Adelaide) (S0040)
- Federal Court of Australia (S0036)
- National Museum of Australia (S0077)
- Department of Foreign Affairs and Trade (S0079)
- Australian Defence Force : HMAS Stuart (Sydney)
- CSIRO Entomology (Canberra)
- Note Printing Australia (Melbourne)
- Australian Postal Corporation (NSW)

3.3 The CEO wrote to each of the above licence holders providing the inspection report and seeking a response to its findings. These are discussed further below in Appendix A – Regulatory Operations.

### **All reports received by the CEO during the quarter under:**

- **paragraph 20(f) – reports from the Council**
- **paragraph 26(1)(d) – reports from the Nuclear Safety Committee**

3.4 The CEO received no reports during the quarter.

## A list of all facilities licensed under Part 5

3.5 No new facility licences were issued during the quarter. Facilities that continued to be licensed during the quarter were as follows:

<b>Australian Nuclear Science and Technology Organisation</b>	
F0118	Replacement Research Reactor (Construction)
F0044-4A	HIFAR Research Reactor
F0044-4B	Waste Operations and Technology Development
F0044-4C	Fuel Storage & Handling
F0044-5A, 5B, 5C	Australian Radiopharmaceuticals and Industrials
F0044-5Cc	Gamma Irradiator Suite
F0044-6A	Moata Research Reactor (Decommissioning)
F0044-6Ba	ANTARES Accelerator
F0044-6Bb	Van de Graff Accelerator
F0044-6C	GATRI Irradiator
F0044-6D	Secondary Standards Dosimetry Laboratory
F0044-7A	Ore Processing Facility
F0044-7B	Radiotracer Storage Facility
F0044-8A	Actinide Suite
F0044-8B	Materials Fabrication Bay
F0134	STAR Accelerator
<b>Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)</b>	
F0046	Linear Accelerator and Teletherapy Laboratory
<b>Australian National University</b>	
F0074	2.5 MeV Accelerator, 14 UD Accelerator and 1.7 MeV Accelerator

<b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b>	
F0060	Heavy Ion Accelerator Facility
F0137	Neutron Generator Facility
<b>Department of Defence</b>	
F0084	Woomera Storage Facility
F0113	Bandiana Storage Facility
F0116	RADIAC Calibration Facility
F0117	Salisbury Storage Facility

<b>Australian Customs Service</b>	
F0155	Fremantle Container Examination Facility
F0125	Matraville Container Examination Facility
F0131	Melbourne Container Examination Facility
F0136	Fisherman Island Container Examination Facility
<b>Single Licence Holders</b>	
F0043	Department of Education Science and Training - Maralinga
F0093	Parks Australia North

## Appendix A - Regulatory Operations

### A.1 Licence Applications Received

<i>Type of application</i>	<i>From</i>
Facility – operate a Prescribed Radiation Facility at Brisbane Airport (F0159)	Australian Customs Service

### A.2 Licence Issuance and Amendments

<i>Type of licence and authorisation</i>	<i>To</i>
Facility – application withdrawn (F0115)	Australian Defence Organisation
Facility and Source – removal of organisational licence conditions (all licences)	Australian Nuclear Science & Technology Organisation (ANSTO)
Facility – amendment to special licence conditions (F0044-5A, 5B, 5C)	ANSTO Radiopharmaceuticals
Source – amendment to previously issued licence (S0015)	Supervising Scientist
Source – amendment to previously issued licence (S0010)	CSIRO Textile and Fibre Technology
Source – amendment to previously issued licence (S0066)	CSIRO Manufacturing and Infrastructure Technology
Source – amendment to previously issued licence (S0019)	CSIRO Marine Research
Source – amendment to previously issued licence (S0045)	ANSTO Bragg Institute
Source – amendment to previously issued licence (S0045)	ANSTO Environment
Source – licence surrendered and accepted by ARPANSA CEO (S0028)	Australian Safeguards and Non-proliferation Office (ASNO)

## **Nuclear Installations**

### **ANSTO - Radiopharmaceuticals and Industrials (ARI) (F0044-5A, 5B, 5C)**

#### *Licence conditions compliance*

A.3 The ARI quarterly report contains an appendix to show the updated status of special licence conditions set out in Licence F0044-5A, 5B, 5C. This appendix is currently

under ARPANSA review to assess the extent of compliance in order to progress the number of special licence conditions that have been satisfied and thus can be removed from the licence by the CEO.

*Relevant changes*

A.4 The report mentions that all mechanical works of B23 isotope processing building ventilation upgrade which were previously approved by ARPANSA are complete and the project is nearing completion (95% complete).

*Other changes*

A.5 A senior member of ANSTO staff has been working as an acting Director of ARI since the previous Director resigned from his position.

A.6 The ARI Licensing Officer resigned and ANSTO is in the process of recruiting a new officer.

A.7 The report mentioned that the ARI Research and Development Group was separated from Radiopharmaceuticals and the new organisational chart will be forwarded to ARPANSA once the organisational structure is finalised.

A.8 A systematic review and revision of all quality documents relating to the Gamma Technology Research Irradiator (GATRI) facility is in the process of being incorporated into the ARI quality format. The target date for inclusion within ARI quality system is 30 June 2005.

*Incident*

A.9 An abnormal occurrence involving release of noble gases from the molybdenum separation facility (B54) occurred but the discharge was within four-weekly discharge limits. Appropriate corrective measures were taken. There are no safety implications from this incident.

*Emission from Building 23A*

A.10 The previous quarter (September 2004) reported that the gross beta emission from the Isotope Processing Building (B23A) stack exceeded the four-weekly notification level. This report mentions that the junior caves SIAM filters have been replaced and the weekly stack records show that the emissions are below the notification level.

*Safety Management Plan*

A.11 A special licence condition requires the licence holder to consider a number of items in the Safety Analysis Report (SAR) as specified in the special licence condition 4.5. ANSTO provided ARPANSA the SAR for Buildings 19 and 76, and this is currently under ARPANSA review.

*Training*

A.12 ARI staff and a Site Operating Safety Supervisor have been trained on the new building management system, emergency exits and evacuation points during the construction work that is being carried out.

*B54 Molybdenum separation plant*

A.13 This report contains a report on the Noble Gas Release Abatement Strategy in B54, which is currently under ARPANSA review.

*Status of Molybdenum Project*

A.14 ANSTO discussed with ARPANSA the use of new irradiation targets for the production of molybdenum-99. Use of the new targets will require prior approval of the CEO under Regulation 51 as this is a 'relevant change' having 'significant implications for safety'. ANSTO entered into a contract with a supplier for the supply of these irradiation targets (U/Al alloy plates) and a process plant for the production of molybdenum-99.

**ANSTO - Waste Operations and Technology Development (F0044-4B)**

*Abnormal occurrences*

A.15 No abnormal occurrences occurred during this quarter.

*Modifications*

A.16 No modifications with significant safety implications for safety were made during the quarter.

*Airborne Discharge*

A.17 Airborne discharges from stacks of Waste Operations facilities remained below the quarterly notification level.

*Liquid Discharge*

A.18 The quarterly report shows that the effluent plant discharges from ANSTO Liquid Waste Treatment Plant were well within the Trade Waste Discharge Limit.

*Inventories*

A.19 The updated inventories of radioactive wastes stored on the LHSTC site, and all changes in inventories occurring in this quarter, were presented.

*Inspection*

A.20 ARPANSA inspectors conducted an inspection of the low-level waste conditioning facility. No non-compliances were observed in the inspection.

**ANSTO - Fuel Operations (F0044-4C)**

*Licence Condition Compliance*

A.21 A special licence condition required an independent review of ANSTO's criticality safety arrangements and ANSTO employed a leading international expert to carry out this review. The expert's report was submitted to ARPANSA and was found acceptable to ARPANSA.

*Incidents*

A.22 There was no incident during this period.

*Airborne discharges*

A.23 Airborne discharges from Fuel Operations stacks were below the authorised notification limits.

*Personnel doses*

A.24 Personnel doses for this quarter were well within local objectives and limits.

*Fuel storage pond facility maintenance*

A.25 Maintenance of the hydraulic system of the Fuel Element Cropping Saw is expected to be completed in early January 2005, followed by the training of staff using the saw. ARPANSA will observe the first cropping activity of spent fuel elements following putting the system back into service.

A.26 The results of water chemistry showed that the alpha-, beta- and gamma-activity levels are below the reporting levels.

A.27 A new water level monitoring unit with alarm and pump “cut out” was installed in B41 pond to improve the monitoring and control of water levels in the pond.

*Ground water borehole monitoring results*

A.28 Collection of water samples was completed in September 2004. These samples were analysed and the results for alpha, beta and gamma measurements were low and comparable to other background values around the LHSTC site.

*Inspection*

A.29 ARPANSA inspectors conducted an inspection at B23 and B41 fuel storage and handling ponds. No non-compliances were observed during the inspection.

**ANSTO - HIFAR Reactor Operations (F0044-4A)**

*Licence Conditions Compliance*

A.30 The quarterly report from the licence holder was received on the 17 January 2005. This report is currently under ARPANSA review to assess the extent of compliance with the special licence conditions so those that have been satisfied can be removed from the licence by the CEO.

A.31 When agreeing to the schedule of activities undertaken during the last major shutdown, the CEO requested the inspection of non-return valves in the primary cooling circuit. ARPANSA officers reviewed the results of the ANSTO inspections. The inspections confirmed that the valves were in good condition.

*Changes*

A.32 HIFAR management identified seven new projects during the quarter. Two of the projects are identified as safety category 1 and will require CEO approval before they can be implemented. Two projects are identified as like-for-like replacement of components. ARPANSA requested that the replacement components be assessed for equivalence to the original components, prior to the change taking place. Three projects are identified as safety category 3 and may be completed without CEO approval.

A.33 During the quarter HIFAR management revised six Operating Procedures and seven Operating Instructions. Copies of the revised documents are provided to ARPANSA for information.

A.34 ANSTO provided a report on the loading of low enriched uranium (LEU) fuel into the reactor. The report confirms that all relevant procedures and instructions have been revised and issued for use. Reactor physics data for the core has been provided to ARPANSA for information.

#### *Incidents*

A.35 Two abnormal occurrences were reported during the quarter. The first abnormal occurrence involved the unintended partial draining of the primary coolant from the reactor. The draining was the result of a valve being left partially open due to operator error. The second abnormal occurrence was the failure of a shutdown pump. It is understood that the failure of the pump can be attributed to the partially draining of the reactor causing the pump to operate without coolant.

#### *ARPANSA Inspections*

A.36 ARPANSA officers conducted an inspection of the facility to investigate the abnormal occurrences associated with the partial draining of the reactor and the failure of a shutdown pump. As a result of the inspection the CEO has requested further information from ANSTO management and is awaiting a response.

A.37 Routine contact visits by ARPANSA officers to monitor HIFAR operations and maintenance continued during the quarter.

#### **ANSTO Airborne Radioactive Discharges**

A.38 ARPANSA received a report from ANSTO on 11 November 2004 about all airborne radioactive discharges from the Lucas Heights Science and Technology Centre between 22 June and 21 September 2004. The report showed that discharges remained less than the quarterly notification levels under the licence authorisation. While Xe-133 discharges from Building 54 are under the notification levels, they continue to be slightly higher than historical levels (see paragraphs A13 and A14).

A.39 The radiation dose at 1.6 km from the HIFAR reactor due to airborne discharges for the quarter was less than two microsieverts – compared to the Airborne Discharge Authorisation dose objective of 20 microsieverts per year. ARPANSA concluded that ANSTO complied with the Airborne Discharge Authorisation for the quarter.

#### **ANSTO Liquid Radioactive Discharges**

A.40 ARPANSA received reports from ANSTO on 22 October, 25 November and 21 December 2004 about radioactive liquid emissions discharged from the Lucas Heights Science and Technology Centre during September, November and December 2004 respectively. It was found that these discharges complied with the Trade Waste Agreement of 2 November 2004 between Sydney Water and ANSTO, with all measured values at most a few per cent of the relevant limit.

## **Prescribed Radiation Facilities**

### **ANSTO Particle Accelerators (F0044-6Ba, 6Bb, F0134)**

#### *Incidents*

A.41 An abnormal occurrence at ANTARES accelerator involving persistent internal discharge creating electrons was reported in the March, June and September 2004 quarters and a radiation level of less than 40  $\mu\text{Sv/hr}$  was measured at the outer level wall of high voltage vessel. Corrective actions were taken to control the radiation exposure.

#### *Modifications*

A.42 Work continued on the planned modification to the 846B caesium sputter source at ANTARES accelerator but no physical work has begun.

#### *Safety management*

A.43 The Safety Analysis Report (SAR) for the STAR accelerator has been submitted to the ANSTO Safety Assessment Committee for approval. A copy will be forwarded to ARPANSA once it is approved by the committee.

A.44 The SAR for ANTARES accelerator is being revised.

#### *Emergency Arrangements*

A.45 Additional safety arrangements are being installed at the STAR accelerator and it is planned to test the local emergency arrangements in second quarter of 2005.

A.46 The local emergency arrangements for the ANTARES accelerator have been tested and the report will be sent to ARPANSA once the review is completed.

#### *Training/Accreditation*

A.47 Four operators have undertaken extensive training and were accredited as operators for the STAR accelerator.

### **ARPANSA (F0046)**

#### *Quality system*

A.48 Both the linear accelerator and teletherapy facility under this licence are covered by a quality system consistent with ISO/IEC 17025. As the Ionising Radiation Section program proceeds to achieve accreditation by the National Australian Testing Association (NATA), documentation will be brought into accordance with the ARPANSA Quality Manual. The target date for bringing the two facilities under the ARPANSA Quality System has been changed from December 2004 to June 2005.

#### *Training, accreditation and authorisation*

A.49 Criteria have been established and documentation is being updated within the quality system. The scheduled date for completion has been changed from November 2004 to March 2005.

*Other changes*

A.50 A new staff member was being inducted.

*Safety tests, inspections and reviews*

A.51 It is reported that procedures exist and documentation is being updated within the quality system and the target date of completion has been changed from November 2004 to June 2005.

*Emergency arrangements*

A.52 Emergency arrangements are in place and testing of interlocks is undertaken routinely. The development of suitable exercises for biennial review is in progress.

*Operating limits and conditions*

A.53 Further clarification on operating limits and conditions is progressing.

*Radiofrequency exposure levels*

A.54 Radiofrequency levels around the linear accelerator were measured and the results indicate no significant levels. The next date of review of radiofrequency exposure is scheduled in February 2005.

A.55 The licence holder's report also addressed the licence conditions of Schedule 1 of the licence. These are acceptable to ARPANSA and will be considered during an inspection of the facilities.

**Australian Customs Service – Pallet X-ray Facility, SA (Application No. F0156)**

A.56 Assessment of the Facility Licence application by ARPANSA reviewers continued during the quarter. The form of the application was approved by the CEO of ARPANSA on 8 November. Additional information was requested from the applicant relating to detailed operating arrangements for the controlled facility on 26 November.

**CSIRO - Heavy Ion Accelerator Facility (F0060)**

A.57 The Facility is shut down. The September quarterly report indicated that two beam lines have been removed. Notification was received of the licence holder's intention to fully dismantle the HIAF facility and sell it either whole or in parts. Currently negotiations are underway with interested parties both nationally and internationally.

**CSIRO - Neutron Generator (F0137)**

A.58 Notification was received under regulation 52 of a relevant change with no significant implications for safety. This relates to neutron induced gamma ray measurements and has been approved by the licence holder's Safety Assessment Committee (SAC1243).

### **Defence - Bandiana RADIAC Calibration Facility (F0116)**

A.59 An inspection during the previous quarter identified a number of potential breaches of licence conditions. A Management Action Plan was developed by the Joint Logistics Unit (Victoria) to address these matters by 31 December 2004. The response, received 15 December, is currently under review.

A.60 Before working on gaseous tritium light devices, the licence holder undertakes surface contamination testing. Upgrading of the facilities at Bandiana is underway to allow decontamination if required.

### **Defence - Bandiana Waste Storage Facility (F0113)**

A.61 An inspection was undertaken during the previous quarter which identified a number of non-compliances. Review of a substantial submission in response to the inspection findings is progressing.

## **Controlled Materials and Controlled Apparatus**

### **Australian Crime Commission (S0034)**

A.62 The Australian Crime Commission was inspected on 13 December 2004. Various minor possible non-compliances with the licence conditions were identified. The licence holder has yet to respond to these findings.

### **Australian Quarantine and Inspection Service (S0071)**

A.63 Following an inspection on 13 July 2004, several items of optical equipment were identified which may be classified as controlled apparatus under the legislation. The licence holder has yet to determine whether any further licence applications are required.

### **Attorney General's Department (S0151)**

A.64 The licensee was inspected on 16 September 2004, and various possible non-compliances were found. The licence holder has yet to respond to these findings.

### **Australian Securities and Investment Commission (S0129)**

A.65 The Australian Securities and Investment Commission was inspected on 13 December 2004. Two minor possible non-compliances were noted. The licence holder has yet to respond to these findings.

### **Australian Federal Police (S0056)**

A.66 There have been high doses recorded on AFP (APS) thermo-luminescent dosimeters (TLDs), most likely from the X-raying of TLDs in mail X-ray machines. Investigations are underway to identify and rectify the source of the high doses recorded.

### **Geoscience Australia (S0014)**

A.67 Various outstanding items from the inspection on 2 July 2004 are due from the license holder, notably the inventory of the isotope store and the safety procedures for the class 3 B laser.

### **Department of Transport and Regional Services (S0020)**

A.68 Several items are still outstanding from the inspection of 16 September 2004. In addition the Australian Transport Bureau, which is part of this Department, has several UV lamps which are likely to be controlled apparatus and need further investigation.

### **Department of Parliamentary Services (S0052)**

A.69 Following an inspection on 17 September 2004, various issues were identified which have not yet been resolved, including the potential requirement to licence three sealed Ni-63 sources.

### **Department of Prime Minister and Cabinet (S0012)**

A.70 No annual review has been received for 2004. In addition, confirmation and details of radiation safety training requirements are yet to be received.

### **Family Court of Australia (Adelaide) (S0040)**

A.71 The Family Court of Australia (Adelaide) was inspected on 28 October 2004. Various non-compliances with the licence conditions were noted. The licence holder has responded to the findings, providing information on training arrangements.

### **Federal Court of Australia (S0036)**

A.72 The Federal Court of Australia was inspected on 22 December 2004. A number of minor possible non-compliances were noted. The licence holder has yet to respond to these findings.

### **National Museum of Australia (S0077)**

A.73 The National Museum of Australia was inspected on 15 November 2004. Possible non-compliances were noted. A response to these findings from the licence holder is due at the end of February 2005.

### **Department of Foreign Affairs and Trade (S0079)**

A.74 The Department of Foreign Affairs and Trade was inspected on 15 November 2004. Possible minor non-compliances were noted, and the licence holder has responded to these findings.

### **National Capital Authority (S0031)**

A.75 The licensee has responded to possible non-compliances identified during the inspection of 20 August 2004.

### **Note Printing Australia (Melbourne) (S0033)**

A.76 Note Printing Australia was inspected on 4 November 2004, in a follow up to an inspection on 21 April 2004. The licence holder has now responded to the majority of findings identified in both inspections, and a final response to complete the necessary actions is expected soon.

### **Australian Postal Corporation (NSW) (S0150)**

A.77 Australian Postal Corporation was inspected at Sydney Airport on 23 November 2004. Various minor non-compliances were noted, but the licensee has now responded and has addressed the findings satisfactorily.

### **Australian Defence Force (S0042)**

A.78 HMAS Stuart was inspected on 29 October. Further information was requested in support of the safety systems associated with the operation of controlled apparatus aboard the vessel. The licence holder has addressed the findings satisfactorily.

A.79 RAAF Amberley Non-Destructive Testing Unit and the Non-Destructive Testing Standards Laboratory were inspected on 20 October 2004. The Australian Defence Force was requested to extend the incident and accident reporting plans to include Defence contractors working at the unit, and provide these contractors with access to the licence conditions imposed on the operation of the controlled apparatus.

A.80 The Defence National Storage and Distribution Centre facility licence application was withdrawn.

A.81 An officer from ARPANSA inspected the relocation of controlled material and controlled apparatus from Defence Science Technology Organisation (DSTO) Maribyrnong to Fishermans Bend.

A.82 An incident involving the possible exposure to two Defence personnel to ionising radiation from controlled apparatus occurred at RAAF Pearce on 29 September 2004 during non-destructive testing of an aircraft. ARPANSA requested, and was provided with, additional information from both the Australian Defence Force and the contractor undertaking the testing. Both reports indicate that it is unlikely the personnel received a significant radiation dose. ARPANSA continues communication with the Australian Defence Force and the contractor to ensure safety management systems are reviewed to prevent a recurrence.

### **CSIRO**

A.83 Two accidents resulting in overexposure to ultraviolet (UV) radiation were reported in

two previous quarterly reports. As a consequence, the Chief Executive of CSIRO issued a direction on 21 September for all divisions to review their operations and produce an action plan to ensure compliance with licence conditions. A summary response from all divisions and a list of items for action was provided to the CEO of ARPANSA on 1 November. All identified actions were to be completed by 31 December. With minor exceptions this appears to have been achieved and the compliance situation with regard to operation of UV transilluminators is regarded as much improved. A program of inspections to confirm compliance in this specific area is nearing completion.

#### **CSIRO – Entomology (S00172)**

A.84 An inspection was undertaken on 16 November. As a result, additional documentary evidence to confirm compliance was requested and subsequently provided.

#### **CSIRO – Plant Industry (S002)**

A.85 An inspection undertaken on 12 October found a number of minor possible non-compliances. The action plan with regard to UV transilluminator use had already been completed. A number of anomalies in the inventory of controlled apparatus have now been rectified and several UV transilluminators, surplus to requirements, have been disposed of.

#### **CSIRO - Livestock Industries (S0022)**

A.86 As noted above, a second accident involving overexposure to UV from a transilluminator occurred on 30 August and was notified to the CEO the following day. An inspection to review progress on the action plan was conducted on 5 November. A number of minor possible non-compliances were noted. Additional training of staff in UV radiation safety awareness was identified in the action plan for completion by 31 December. Also identified was the need for a comprehensive review of the source inventory. The quarterly report for December included the results of this review.

### A.87 Compliance Reporting by Licence Holders for October to December 2004

Licence <sup>1</sup>	Licence Holder	Date of receipt of quarterly report		Comment <sup>2</sup>
		Jul-Sep	Oct-Dec	
<b>Australian Nuclear Science and Technology Organisation</b>				
F0118	Replacement Research Reactor (Construction)	23 Nov	3 Feb	Submissions for six requests for approval for construction of items important to safety
F0044-4A	HIFAR Research Reactor	26 Oct	21 Jan	Incident involving partial draining of reactor tank.
F0044-4B	Waste Operations and Technology Development	27 Oct	19 Jan	A planned inspection was conducted at B20B on 25 November 2004.
F0044-4C	Fuel Storage & Handling	27 Oct	19 Jan	276 spent fuel elements were shipped to COGEMA. A planned inspection was conducted at B23 and B41 ponds on 25 November 2005.
F0044-5A, 5B, 5C	Australian Radiopharmaceuticals and Industrials	30 Sep	31 Jan	An incident involving increased emission of noble gases occurred but remained with the 4-weekly discharge limits.
F0044-5Cc	Gamma Irradiator Suite	16 Nov	Not received (10 Feb)	
F0044-6A	Moata Research Reactor (Decommissioning)	27 Oct	19 Jan	No change
F0044-6Ba	ANTARES Accelerator	28 Oct	28 Jan	Incident involving persistent internal discharge creating electrons occurred.
F0044-6Bb	Van de Graff Accelerator	28 Oct	28 Jan	No change
F0044-6C	GATRI Irradiator	30 Sept	31 Jan	No change
F0044-6D	Secondary Standards Dosimetry Laboratory	2 Nov	Not received (10 Feb)	
F0044-7A	Ore Processing Facility	28 Oct	28 Jan	Current inventory provided. Updates to several procedures reported. One safety category 2 and one safety category 3 modification are planned.
F0044-7B	Radiotracer Storage Facility	28 Oct	28 Jan	Current inventory provided.
F0044-8A	Actinide Suite	28 Oct	Not received (10 Feb)	Upgrade to fire prevention system completed. Commissioning test report provided. Update of work instructions and form for registering and reporting abnormal occurrences.
F0044-8B	Materials Fabrication Bay	8 Oct	04 Feb	Upgraded ventilation system completed.
F0134	STAR Accelerator	28 Oct	28 Jan	Four operators were accredited.
S0045	Environment	26 Oct	28 Jan	Minor changes to source inventory
	Materials	12 Oct	02 Feb	Minor changes to source inventory
	Engineering	27 Oct	28 Jan	No change

	Safety & Radiation Science	26 Oct	24 Jan	Minor changes to source inventory
	Bragg Institute	27 Oct	28 Jan	No change
<b>Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)</b>				
F0046	Linear Accelerator and Teletherapy Laboratory	8 Oct	03 Feb	No change
S0002	Environmental & Radiation Health Branch	28 Oct	21 Jan	No change
S0003	Medical Radiation Branch	28 Oct	21 Jan	No change
S0051	Non-ionizing Radiation Branch	28 Oct	21 Jan	No change
S0086	Environmental and Radiation Health Branch	28 Oct	21 Jan	No change
<b>Australian National University</b>				
F0074	2.5 MeV Accelerator, 14 UD Accelerator and 1.7 MeV Accelerator	1 Nov	27 Jan	No change
S0027	Source Licence	2 Nov	03 Feb	No change
<b>Commonwealth Scientific and Industrial Research Organisation (CSIRO)</b>				
F0060	Heavy Ion Accelerator Facility	1 Nov		Facility is shut down. Negotiations for its sale are underway.
F0137	Neutron Generator Facility	4 Oct	30 Dec	Notification under r52 of a relevant change with no significant implications for safety. This relates to neutron induced gamma ray measurements and has been approved by the Safety Assessment Committee (SAC1243).
S0009	Land and Water	13 Oct	31 Jan	Minor changes to source inventory. Annual review of plans and arrangements reported: Non-ionising apparatus – 29 October 2004
S0010	Textile & Fibre Technology	11 Oct	25 Jan	No change
S0013	Corporate Property	27 Sept	11 Jan	No change
S0016	Molecular Science	11 Oct	21 Dec	No change
S0017	Entomology	5 Oct	07 Jan	No change
S0018	Sustainable Ecosystems	5 Oct	19 Jan	No change
S0019	Marine Research	27 Sep	25 Jan	No change to inventory. Annual review of plans and arrangements reported: Non-ionising apparatus – 20 September 2004 Ionising radiation – 17 August 2004
S0021	Plant Industry	29 Oct	28 Jan	Minor changes to source inventory.
S0022	Livestock Industries	18 Sep	13 Jan	Detailed review of source inventory.
S0023	Food Science Australia	19 Oct	07 Feb	No change

Quarterly Report of the Chief Executive Officer for the period 1 October – 31 December 2004

S0025	Energy Technology	28 Oct	27 Jan	No change
S0030	Petroleum Resources	11 Oct	14 Jan	Minor changes to source inventory, including the addition of one laser.
S0038	Health Sciences	25 Oct	28 Jan	Minor changes to source inventory. Annual review of plans and arrangements reported: X-ray apparatus – 10 April 2004 Ionising radiation – 7 June 2004 Non-ionising apparatus – 13 September 2004
S0054	Forestry and Forest Products	1 Nov	09 Feb	Minor amendments to source inventory
S0059	Atmospheric Research	4 Oct	04 Jan	No change
S0061	Exploration & Mining	29 Oct	03 Feb	Minor changes to source inventory. New nominee.
S0064	Minerals	4 Oct	30 Dec	Minor changes to source inventory, including the addition of X-ray (1) and non-ionising (3) controlled apparatus
S0066	Manufacturing and Infrastructure Technology	29 Nov	04 Feb	Minor changes to source inventory including disposal of X-ray apparatus and acquisition of a sealed source in a fixed gauge.
S0105	Industrial Physics	7 Oct	18 Jan	Notification of a change of name for the division. No other change.
S0130	Australia Telescope National Facility	2 Nov*	30 Dec	No change *Source Licence issued 9 July
<b>Department of Defence</b>				
F0084	Woomera Storage Facility	5 Nov	02 Feb	Facility is closed. Nothing to report.
F0113	Bandiana Storage Facility	5 Nov	02 Feb	Addition of waste material from RAAF Amberley. Report included a response to the inspection report from last quarter.
F0116	RADIAC Calibration Facility	5 Nov	02 Feb	A response was provided to the inspection report from last quarter.
F0117	Salisbury Storage Facility	5 Nov	02 Feb	Facility is closed. Nothing to report.
S0042	Aust Defence Organisation	Nov	02 Feb	See item under Regulatory Operations
<b>Australian Customs Service</b>				
F0155	Fremantle Container Examination Facility	28 Oct	7 Feb	No change
F0125	Matraville Container Examination Facility	28 Oct	7 Feb	No change
F0131	Melbourne Container Examination Facility	28 Oct	7 Feb	No change
F0136	Fisherman Island Container Examination Facility	28 Oct	7 Feb	No change
S0092	Source Licence	8 Oct	25 Jan	Two additional 450 kVp pallet X-ray apparatus

Single Licence Holders				
F0043	Department of Education Science and Training - Maralinga	1 Nov	27 Jan	No change
F0093	Parks Australia North	20 Oct	31 Jan	Progress on developing containment options
S0005	Bureau of Meteorology - Cape Grim	1 Sep	04 Jan	Transfer of one sealed source.
S0007	Aust Institute of Marine Science	Not received	07 Feb	Minor additions to source inventory
S0008	Australian Antarctic Polar Medicine	Not received	02 Feb	One controlled apparatus added to inventory and request received to dispose of one controlled apparatus.
S0012	Dept Prime Minister & Cabinet	Not received (25 Oct)	28 Jan	Licensee is currently reviewing plans and procedures. To be available by 31 March 2005.
S0014	Dept of Industry, Tourism & Resources (Geoscience Australia)	22 Oct	25 Jan	Procedures on use of laser being updated. Inventory of radioactive mineral specimens ongoing.
S0015	Supervising Scientist	20 Oct	19 Jan	UV source added.
S0020	Dept of Transport & Regional Services	22 Oct		See item under Regulatory Operations.
S0024	National Gallery of Australia	Not received (25 Oct)	09 Feb	Under assessment.
S0028	Australian Safeguards & Non-Proliferation Organisation	N/A	N/A	Licence surrendered.
S0031	National Capital Authority	Not received (25 Oct)	28 Jan	Progress has been made on outstanding items from the inspection of August 2004. See item under Regulatory Operations.
S0033	Note Printing Australia	Not received (25 Oct)	05 Jan	Inspected on 4 November 2004.
S0034	Australian Crime Commission	20 Oct	31 Jan	A copy of the missing source licence has been sent to ACC. Awaiting annual review of plans and procedures, radiation safety training records and copies of work procedures.
S0036	Federal Court of Australia	Not received	Not received (09 Feb)	
S0040	Family Court of Australia	8 Oct	24 Jan	Plans reviewed and updated December 2004. Operator safety training programme being developed.
S0047	Geoscience National Mapping Division	22 Oct	Not received (09 Feb)	
S0052	Dept of Parliamentary Services	Not received	Not received (09 Feb)	

Quarterly Report of the Chief Executive Officer for the period 1 October – 31 December 2004

S0055	Dept of Environment & Heritage Aust Antarctic Division	1 Nov	14 Jan	No change. The radiation safety manual and some local operating guidelines were reviewed in compliance with r 50.
S0056	Australian Federal Police	30 Sept	23 Dec	Minor changes to source inventory.
S0077	National Museum of Australia	25 Oct	21 Jan	No change
S0079	Dept of Foreign Affairs & Trade	9 Sept	28 Jan	Changes to inventory. Annual review of plans provided to ARPANSA. Radiation safety training arranged for operators.
S0080	Australian War Memorial	28 Sept	07 Feb	Assessment of licensee quarterly report ongoing.
S0090	Silex Systems Ltd	11 Oct	29 Dec	Under review.
S0120	Dept of Agriculture Fisheries & Forestry	6 Oct	19 Jan	Under review.
S0127	Telstra	Not received	10 Jan	No change.
S0129	Australian Securities & Investments Commission	22 Oct	08 Feb	No change.
S0135	Dept Immigration, Multicultural & Indigenous Affairs	Not received (25 Oct)	18 Jan	Under review.
S0142	Australian Government Analytical Laboratories	Not received	Not received (10 Feb)	
S0150	Australian Postal Corporation	Not received (25 Oct)	03 Feb	The nominated RSO has changed.
S0151	Attorney-General's Department	21 Oct	07 Feb	No change.

Note 1 'F' indicates Facility Licence and 'S' indicates a Source Licence

Note 2 'No change' in relation to a Source Licence or Facility Licence means that during the quarter:

- no breach of licence conditions was reported under regulation 45
- no accident was reported under regulation 46
- no relevant change was reported under regulation 52
- no transfer or disposal of controlled material or controlled apparatus was reported under regulation 53
- no change to the inventory of controlled material or controlled apparatus was reported

## Appendix B - Service Operations

### B.1 The Radiofrequency Calibration Laboratory

Calibration requests	Jobs completed as NATA accredited reports	Job composition
63	58	51 monitors (with 55 probes) Two RF badges and 10 other types

### B.2 Ultraviolet Protection Factor Testing, Licensing and Labelling

Job requests	Fabric samples tested	UPF trademark licenses completed	UPF swing tags issued	Pairs of sunglasses tested
112	430	10	1,786,000	Nil

### B.3 Radioanalytical Service

Water samples received	Food samples received	Soil/Sediment samples received	Filter samples received	Wipe test samples received
340	79	25	66	24

### B.4 Dosimetry Calibration Service

Reference standard ionization chambers calibrated	Reference standard ionization chamber calibrations in progress	Gamma survey meters calibrated	Neutron survey meter calibrated	Beeper Sv personal dosimeters calibrated
5	1	5	1	5

### B.5 Import Permits issued under Customs (Prohibited Import) Regulations 1956 – Medical Radioisotopes

Total permits issued	Single-shipment permits issued	12-monthly permits issued	Permits issued urgently
116	103	9	4

### B.6 Import Permits issued under Customs (Prohibited Import) Regulations 1956 – Non-Medical Radioisotopes

Total permits issued	Single-shipment permits issued	12-monthly permits issued	Permits issued urgently
116	57	4	55