



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

**FOR THE PERIOD 1 JULY TO 30 SEPTEMBER 2002**





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ISSN 1444 - 4380

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Printed by

CanPrint Communications Pty Ltd  
16 Nyrang Street  
Fyshwick ACT 2609

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## **FOREWORD**

The *Australian Radiation Protection and Nuclear Safety Act 1998* 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 should also 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 Council on radiation protection, nuclear safety and the safety of controlled facilities and details of facilities licensed under Part 5 of the Act.

Further details about matters contained in this report are available through the ARPANSA Public Affairs Officer who can be contacted by telephone on 02 9545 8333, by facsimile on 02 9545 8314 or by e-mail to [arpansa@health.gov.au](mailto:arpansa@health.gov.au).

## **REPORT ON PERFORMANCE**

### **1. Uniformity of Radiation Protection Frameworks**

#### **National Directory for Radiation Protection**

- 1.1 The National Uniformity Implementation Panel (Radiation Control) considered the comments of all jurisdictions in August 2002. It was anticipated that Version 1 of the Directory would be released for a first round of public consultation in the fourth quarter during finalisation of a regulatory impact statement on the Directory.

#### **National Competition Policy Review of Radiation Protection Legislation**

- 1.2 The revised list of recommendations and the Implementation Plan was endorsed by the Australian Health Minister's Conference in August/September 2002 out-of-session. Implementation action was underway under the auspices of the National Uniformity Implementation Panel (Radiation Control).

### **2. Advice on Radiation Protection and Nuclear Safety**

#### **Radiation Emergencies**

- 2.1 As a result of increased awareness of the potential for radiation emergencies resulting from terrorist actions, ARPANSA maintains a Radiation Emergency Control Centre at its Yallambie premises and a 24-hour radiation emergency contact point for the agency.
- 2.2 In July, advice was given to the National Chemical, Biological and Radiological

Working Group on radiation monitoring equipment for a CBR Enhancement Program. In August, an officer of the Health Physics Section attended a meeting on Commonwealth planning for re-entry of radioactive space debris.

- 2.3 ARPANSA officers took part in port visits by the Visiting Nuclear Ships Panel (Nuclear) Working Group to the Ports of Brisbane and Gladstone to validate these for visits by nuclear powered vessels. Later in August ARPANSA provided an environmental monitoring on-call team for a nuclear powered warship visit to Brisbane.

### **Comprehensive Test Ban Treaty – air sampling monitoring systems**

- 2.4 As part of Australia's commitment to the Comprehensive Test Ban Treaty, work continued on the construction and operation of radionuclide monitoring stations. The station in Darwin was certified by the Provisional Technical Secretariat, becoming the fourth Australian radionuclide air sampling station so certified. In addition, construction by ARPANSA of a station located at Kavieng in Papua New Guinea was completed and became operational. Site works on the station in the Cocos Islands continued.

### **Radiofrequency (RF) exposure standard**

- 2.5 Staff responded to the Australian Communication Authority's discussion paper on proposed amendments to the Radiocommunications (Electromagnetic Radiation) Human Exposure Standard 2001 to incorporate the limits of the new Radiation Protection Standard developed by ARPANSA.

### **Nuclear powered warships**

- 2.6 ARPANSA officers attended a Visiting Ships Panel (Nuclear) meeting in Canberra in July. This panel maintains the arrangements for visits by nuclear powered warships to Australian ports. A reassessment of the suitability of the port of Hobart is being prepared for ARPANSA.

### **Conferences, meetings and technical advice**

#### Non-Ionizing Radiation Branch

- 2.7 As a member of Standards Australia HE-3-12), Wayne Cornelius attended a meeting in Sydney to revise AS/NZS 4173 *Guide to the Safe Use of Lasers in Health Care* on 8 August.
- 2.8 Various Branch members attended the Electricity Supply Association of Australia EMF Scientific Workshop 2002 on August 9. Ken Karipidis presented the ARPANSA technical Report titled *Measurement of Residential Power Frequency Magnetic Fields*. Colin Roy gave a presentation on the World Health Organisation Health Risk Assessment.
- 2.9 Michael Bangay attended a meeting of the Municipal Association of Victoria Telecommunications Working Group on 14 August. On 28 August he attended an

- EMF Community Liaison meeting at Cessnock in New South Wales. On 5 September Michael presented evidence as an expert witness in the New South Wales Land and Environment Court on development of a mobile phone base station.
- 2.10 As a member of Standards Australia CH-26-5, Wayne Cornelius attended a meeting in Sydney to revise the AS 2243.5 *Safety in Laboratories: Non-Ionizing Radiations* on 27 August.
- 2.11 Work continued on the Regulatory Impact Statement for the draft ARPANSA Occupational Ultra-Violet Radiation (UVR) Exposures Standard. Work began on a draft Outdoor Worker Safety Guide to accompany the Statement and the Standard.
- 2.12 Staff attended two meetings at the Bureau of Meteorology organised by the Australian Cancer Society. These were to coordinate the adoption of new World Health Organisation UV Index Reporting formats/guidelines. Adoption will commence with the start of daylight saving on 27 October.
- 2.13 A report on solar UVR levels around Australia was provided to the Department for Environment and Heritage for South Australia's State of the Environment report. Solar UVR data for Melbourne from 2000 to 2002 was provided to the Victorian Clinical Genetics Service of the Royal Children's Hospital for a Vitamin-D study.
- 2.14 Information was also provided to the Australian Cancer Society for its Car Tinting Position Statement and to the Queensland Cancer Fund on UVR from intense light sources in photography called carbon arcs.

#### Medical Radiation Branch

- 2.15 A workshop on the "ISO Guide to Uncertainties in Measurement" was attended by IRS staff in July at the National Measurement Laboratory, Lindfield, NSW.

#### Environmental and Radiation Health Branch

- 2.16 ARPANSA and the Supervising Scientist Division of Environment jointly sponsored the Third International Symposium on Protection of the Environment from Ionizing Radiation in Darwin from 22 to 26 July. The meeting was also sponsored by the IAEA. Keynote speakers included Dr Lars-Erik Holm, Director General of the Swedish Radiation Protection Authority, current Vice Chairman of the International Commission on Radiological Protection (ICRP) and Chairman of the ICRP Working Group on the Environment. In all, 92 delegates attended.
- 2.17 Neil Morris from the Personal Radiation Monitoring Service attended an international conference during August on occupational radiation protection in Geneva.
- 2.18 The Health Physics Section carried out gamma radiation measurements around the Port of Brisbane as part of a program establishing baseline environmental levels Australia-wide.
- 2.19 In September, Rick Tinker attended a Radionuclide Workshop and Working Group

meeting organised by the Comprehensive Test Ban Treaty Organisation.

- 2.20 Richard O'Brien attended a workshop on internal dosimetry at the National Radiological protection Board in the United Kingdom and a technical Committee meeting of the IAEA in Vienna during September.
- 2.21 Also in September, Erin McWilliams travelled to Richland, Washington State, to attend a technology workshop on noble gas monitoring following atmospheric tests of nuclear weapons at the Pacific Northwest Laboratories.

### Regulatory Branch

- 2.22 Samir Sarkar contributed a paper titled *Licensing of Existing Controlled Facilities in Australia* at the International Conference on Occupational Radiation Protection: Protecting Workers Against Exposure to Ionising Radiation, Geneva, Switzerland, 26-30 August.
- 2.23 Stuart Prosser delivered a paper titled *ARPANSA's Regulatory Role in the Protection of the Environment from Ionizing Radiation* at the 3<sup>rd</sup> International Symposium on the Protection of the Environment from Ionizing Radiation in Darwin, held from 22-26 July. Peter Colgan presented a paper at the same event titled *Regulatory Assessment of Risk to the Environment: Radiation*.
- 2.24 Peter Colgan attended an International Atomic Energy Agency (IAEA) technical meeting on the Code of Conduct on the Safety and Security of Radioactive Sources held on 19-23 August in Vienna, Austria. An updated Code was drafted, extending the requirements for ensuring the safety and security of sources to persons appropriately authorised to deal with sources, and enhancing provisions dealing with security in proportion to the risk posed by the source. Obligations on importers of radioactive sources were strengthened, and requirements on export of hazardous sources were drafted, which has minor resource implications for Australian regulators.

### **Public communication activities**

- 2.25 Peter Gies of the Non-Ionizing Radiation Branch provided technical information on clothing and UVR protection to a journalist writing an article on sun protective clothing for a large journal/magazine in the U.S.
- 2.26 Non-Ionizing Radiation Branch continued to provide information to other journalists, and members of the public, regarding electromagnetic energy (EME) and health. Powerline related inquiries continued to dominate in the quarter. Information was also sought on mobile telephony, especially radiation exposure from associated base stations. There was a noticeable increase in inquiries related to radiation leakage from microwave ovens. More information sheets on these topics were being created.
- 2.27 The EME database established in the June quarter, that includes published literature on static, extremely low frequency and radiofrequency fields, was updated as

analysis of relevant literature continued.

- 2.28 Non-referred whole body CT screening became a hot topic and the Medical Physics Section responded to numerous inquiries on the topic.
- 2.29 The Public Affairs Officer responded to numerous phone inquiries. Most commonly, callers requested information about health issues concerning magnetic fields from such things as powerlines, transformers, substations, and meter boxes. Other topics of interest were the possible health effects of mobile phones and base stations, radiation leakage from microwave ovens, the fault line discovered during site excavations for the replacement research reactor at Lucas Heights.
- 2.30 Visitors to the ARPANSA web site who download a single file are logged as a single hit. ARPANSA's site received a total of 101,678 successful 'hits' in the quarter. Average daily 'hits' over the period were: *July* – 1,048, *August* – 1,111 and *September* – 1,156. The three most popular page views were: *July* – Home (388), Resource Guide for UVR Protective Products: Product Categories (162) and Radiation and Health Information: Radiation Emissions from Microwave Ovens (130); *August* – Home (430), Related Sites (133) and Resource Guide for UVR Protective Products: Product Categories (118); *September* – Home (439), Related Sites (101) and Radiation Protection Series Publications (94).

### 3. Research on Radiation Protection, Nuclear Safety and Medical Exposures to Radiation

#### **Non-ionizing radiation**

- 3.1 Colin Roy gave a presentation on the Antarctica solar UVR program at an international review of Antarctic science held at the Antarctic Division offices in Hobart on 5 August.
- 3.2 Measurements were completed in a joint study with Victoria University, Wellington, on the UVR protection afforded by shade structures at 30 schools around New Zealand. Staff began analysing the data and drafting a scientific paper.
- 3.3 In July, staff sought financial or resource assistance from the electricity supply industry and State and Territory Regulatory Authorities for implementing a national survey of residential magnetic field exposure. At a subsequent meeting on 20 August, industry representatives indicated they would be prepared to provide assistance in-kind.
- 3.4 Peter Gies co-authored an information guide aimed at health professionals for the New Zealand Cancer Society, *Cancer Updates*, covering effective use of sunscreens and due out this Summer.
- 3.5 Colin Roy was notified that the World Meteorological Organisation Working Group paper he co-authored in 2001 with Seckmeyer, G., Bais, A. F., Bernhard, G., Blumthaler, P., Eriksen, R., McKenzie, C. and Miyauchi, M. was published. It is

titled *Instruments to Measure Solar Radiation, Part 1: Spectral Instruments* (WMO-GAW Report No.126).

- 3.6 A manuscript covering intercomparison of UPF testing with ten laboratories from around the world was been accepted for publication in the international journal *Photochemistry and Photobiology*. ARPANSA co-authors were Peter Gies, Colin Roy and Alan McLennan.
- 3.7 A paper titled *Solar UVR Measurements in Antarctica: 1998 to 2001* by John Javorniczky, Colin Roy, Peter Gies, Stuart Henderson and Des Lugg was accepted for presentation at the Engineering and Physical Sciences in Medicine 2002 Conference due in November.
- 3.8 An abstract on International Commission on Illumination Technical Committee 629 “Sun Protective Clothing” activities was accepted for the Commission symposium in San Diego in July 2003.

### **Medical radiation**

- 3.9 The Medical Physics Section continued to provide detailed assessments of the dose and risk of certain procedures to medical practitioners at their request. Four such calculations were performed in the quarter, three of which involved pregnant women.
- 3.10 The Medical Physics Section continued its national survey on radiation doses from diagnostic radiology (excluding computed tomography or CT). First round questionnaires went out to all states except New South Wales and Queensland. Due to privacy requirements the mailout for New South Wales was being arranged on ARPANSA’s behalf through that state’s Environment Protection Authority. A similar solution was pursued with respect to Queensland.
- 3.11 The Radiation Health and Safety Advisory Council and the Cardiac Society of Australia and New Zealand have initiated a project aimed at increasing awareness and education of radiation safety in the use of fluoroscopic equipment by cardiologists during interventional procedures. The Medical Physics Section has supported this project and developed a detailed questionnaire to be sent to Cardiac Society members.
- 3.12 The IAEA graphite calorimeter and controls were assembled and underwent preliminary testing. The unit will be able to replace the ARPANSA calorimeter in the Cobalt irradiation facility. This will act as a temporary replacement for the Australian standard of absorbed dose while the ARPANSA calorimeter is being repaired and upgraded.
- 3.13 Results of the pilot study of ARPANSA’s therapy dosimetry quality assurance program were reviewed and reports were sent to the six participating therapy centres. Development of procedures for the full audit continued and were discussed with the convenor of the Therapy Interest Group of the Australasian College of Physical Scientists and Engineers in Medicine.

## 4. Services Provided in Radiation Protection, Nuclear Safety and Medical Exposures to Radiation

### Calibration services

- 4.1 There was continued strong demand for commercial service work, including the laboratory calibration of radiofrequency (RF) monitors and probes. A total of 68 jobs were received, of which 66 were completed. These consisted of 54 monitors, 73 probes, nine badges/dosimeters and 20 miscellaneous tests/calibrations.
- 4.2 In July, the ARPANSA RF calibration service gained accreditation from the National Association of Testing Authorities (NATA). This means it is now able to issue authorised NATA test reports.
- 4.3 Wayne Cornelius attended a workshop at the National Measurement Laboratory (part of the Commonwealth Scientific and Industrial Research Organisation or CSIRO) on 26 July on the assessment of measurement uncertainties related to the International Standardization Organization *Guide to the Expression of Uncertainty in Measurement*.
- 4.4 Workshops were held to resolve documentation for accreditation of the Ionizing Radiation Standards Section's protection level calibration facility. The scope was widened to include all radioactive sources commonly used by the facility.
- 4.5 The Ionizing Radiation Standards Section dosimetry calibration service completed five calibrations and two irradiations for external clients, including three therapy centres. Five calibrations were conducted for sections within ARPANSA.

### Fabric testing and labelling

- 4.6 The Ultraviolet Protection Factor (UPF) Quality Management Committee met during this period. The drafting of documentation for accreditation of the UPF rating service continued. Staff finished developing timelines for the completion of all required documentation.
- 4.7 There was continued strong demand for fabric UPF testing, licensing and labelling during the quarter. 113 jobs were received that involved the testing of 429 fabric samples. In addition, 23 UPF trademark licences were completed and 959,500 UPF swing tags were issued. All UPF testing clients and licensees were advised of new charges for testing. In addition, three large fabric producing companies successfully underwent UPF intercomparison testing with ARPANSA to have their test reports accepted for ARPANSA UPF swing tags.
- 4.8 Scientific consultation on solar UVR levels worldwide was provided to a large plastics and fibreglass company. Further sunglass and visor testing (48 samples) was conducted for four different companies. Phototherapy cabinet calibrations were also undertaken, as was a calibration of UVR detectors for another company.

## **QA program for radiopharmaceutical products**

- 4.9 The quality assurance program for radiopharmaceutical products used by hospital nuclear medicine departments found that all batches tested complied with radiochemical purity specifications.

## **5. Council and Committee Operations**

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

- 5.1 The Council met on 9 August in Sydney. A summary of the meeting is available at this web address: <http://www.health.gov.au/arpansa/rhsac.htm>.

### **Radiation Health Committee**

- 5.2 The Committee met on 31 July and 1 August in Yallambie. Summaries of the meetings are available at <http://www.arpansa.gov.au/rhc.htm>.

### **Nuclear Safety Committee**

- 5.3 The Committee met on 12 July in Sydney and for a briefing on the seismic faulting at Lucas Heights on 27 September. Summaries of the meeting and briefing are available at <http://www.health.gov.au/arpansa/nsc.htm>.

### **Radiation Protection Series publication program**

- 5.4 The *Recommendations for the Discharge of Patients Undergoing Treatment with Radioactive Substances* was published on 25 September.

## **6. Regulation**

### **Standards**

- 6.1 ARPANSA officers participated in a working group that produced a draft revision of the Radiation Protection Series publication *Recommendations for Intervention in Emergency Situations involving Radiation Exposure* as part of the Radiation Health Committee review.

### **Licensing**

#### Licence Applications

- 6.2 Two new applications for source licences were received from ANSTO Environment Division relating to a borehole logger and environmental radioisotope tracing.

#### Application Assessment and Licence Issuance

- 6.3 Regulatory assessment of applications and, in some cases, existing licences resulted

in the following licensing decisions:

- 6.4 Source licences were issued to:
- Note Printing Australia;
  - Australian National University, comprising nine Schools or Departments;
  - Australian Radiation Protection and Nuclear Safety Agency - Environmental and Radiation Health Branch and Medical Radiation Branch.
- 6.5 Amended source licences, incorporating previously issued source licences, were issued to:
- Three divisions of ANSTO;
  - The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Division of Textile and Fibre Technology;
  - The Department of the Environment and Heritage, Antarctic Division;
  - The Department of Agriculture, Fisheries and Forestry, Australian Quarantine Inspection Services (AQIS);
  - The Australian Customs Service.
- 6.6 Facility licences were issued to:
- ANSTO to site and construct a controlled facility called the 2MV Tandem Accelerator (TANDETRON);
  - ANSTO to operate a controlled facility called the 3MV Van de Graaff Accelerator;
  - Australian Customs Service to prepare a site and to construct a controlled facility, namely a shipping container examination facility at Fisherman's Island in Queensland.

### Import Permits

- 6.7 The Regulatory Branch processed 120 Customs Prohibited Release permits for the importation of non-medical radioisotopes. The Radiopharmaceutical Section issued 104 Customs Prohibited Release permits for the importation of medical radioisotopes.

### Australian Nuclear Science and Technology Organisation (ANSTO) - Replacement Research Reactor

- 6.8 The CEO issued a licence to construct the replacement research reactor facility on 4 April. The licence, the Reasons for Decision, and the Regulatory Branch review of ANSTO's application for a facility licence to construct are published on the ARPANSA web site: <http://www.arpansa.gov.au>. The facility must be constructed according to the stated intentions in the application and in compliance with the 18 conditions listed in the licence.

- 6.9 The CEO of ARPANSA required geological mapping during excavation for the foundations of the replacement research reactor at Lucas Heights and this revealed a geological fault through the site, a discovery that was confirmed in June. To determine whether the fault was ‘capable’ of causing surface displacement or impact on the seismic design basis for the replacement reactor, ANSTO engaged expert consultants to propose and conduct a program of work. These investigations included determining the age (the geological time period during which the fault occurred), history of any subsequent movement and the extent of the fault. On-site construction activities ceased pending the outcome of the investigations and agreement of the CEO of ARPANSA for construction to continue.
- 6.10 ARPANSA retained Geoscience Australia and, through the IAEA, the services of an international paleoseismologist to independently review available information about the fault, the adequacy of ANSTO’s program of work and its conclusions. ARPANSA’s consultants visited the reactor site and surrounding areas, and held discussions with ANSTO’s expert consultants. ARPANSA also sought advice about national and international criteria and practices for the construction of hazardous facilities (such as dams and nuclear facilities) on or near faults like the one discovered at ANSTO’s site. Investigations were continuing at the end of the quarter.

#### ANSTO Actinide Suite

- 6.11 Regulatory review of the application for a licence to operate the facility continued.

#### ANSTO Physics Division

- 6.12 The safety evaluation reports for two prescribed radiation facilities of ANSTO Physics Division, namely the 2 MV Tandem Accelerator and the 3 MV Van de Graaff Accelerator were finalised and the corresponding licences were issued to ANSTO.

#### ARPANSA, Melbourne

- 6.13 Regulatory Assessment Reports reviewing the licence applications for the ARPANSA Teletherapy Laboratory and Linear Accelerator Laboratory at Yallambie were in the final stages of preparation.

#### Department of Defence

- 6.14 The assessment of the five Prescribed Radiation Facility licence applications from Department of Defence continued during the period, with Defence supplying additional information requested by ARPANSA.

#### Australian Institute of Marine Science

- 6.15 Discussions on the licensing of additional controlled apparatus continued with the Institute. Two officers visited the Institute laboratories and gave a presentation on licensing issues to the Radiation Safety Committee.

## **Compliance, Audit and Inspection**

### ANSTO HIFAR Reactor Operations

- 6.16 The quarterly report on compliance with licence conditions and other reportable items was received. This included the status of plant modifications and engineering projects between July and September, as required under the licence conditions (Facility Licence No. FO0044-4A). Three new projects were identified during the quarter and assigned a safety classification. 25 projects were in progress at the end of the quarter, three of which had not been classified, while a further three had reached practical completion and none had reached final completion.
- 6.17 As part of the requirement of Special Licence Condition 3.10(c), HIFAR-specific waste procedures and instructions were being prepared to cover monitoring, sampling, recording and reporting of radioactive waste transfers from HIFAR to Waste Operations. These procedures and instructions are scheduled for completion by the end of December.
- 6.18 The Operational Limit and Condition 4.1.1.5 on rig reactivity worth was not yet completed. ARPANSA comments on the draft were being considered by ANSTO.
- 6.19 Routine contact visits by Regulatory Branch staff to monitor HIFAR operations and maintenance continued during the quarter. These provided the opportunity for officer to officer discussions on licensing and other regulatory issues.

### ANSTO Replacement Research Reactor Site Licence

- 6.20 A quarterly report by ANSTO on its compliance with the *Replacement Research Reactor Facility Licence, Site Authorisation* was not received during the quarter [but subsequently was on 28 November].
- 6.21 ANSTO submitted 19 requests for approval (RFAs) by the CEO of ARPANSA for construction of items important for safety, in accordance with licence condition 4.6. Nine of these requests, in addition to four from the previous quarter, received CEO approval during the reporting period.
- 6.22 Ten RFAs were under review at the end of the quarter and additional information was sought from the Licence Holder to allow the CEO to make an informed decision. One of these was a request to proceed with detailed engineering of the Reactor Protection System and the Post Accident Monitoring System on the basis of five plans. ARPANSA was unable to recommend approval for construction on that basis and will review the final ANSTO submission when available. In addition, ARPANSA awaited further analysis from ANSTO on the manufacture and qualification of Safety Category 1 Electrical Switchboards.
- 6.23 The licence to construct the replacement research reactor issued by the CEO on 4 April does not include authorisation to construct the Cold Neutron Source. ANSTO submitted a separate Preliminary Safety Analysis Report for the system in July, and requested approval to construct. An initial review of the report by Regulatory

Branch led to ANSTO being asked a number of questions to clarify the design.

### ANSTO Physics Division

6.24 ANSTO is licensed to site and construct a 2MV Tandem Accelerator (TANDETRON) under Facility Licence F0134. ANSTO Physics Division submitted a quarterly report to the CEO of ARPANSA in accordance with a condition of licence. The report covered clearing and preparation of the site, forming and pouring the concrete slab and shipping of the new accelerator from Rotterdam in Holland.

### ANSTO Moata Decommissioning

6.25 As required under a condition of licence, Moata supplied a quarterly report indicating that there were no modifications, no abnormal occurrences and no release of radioactive material during the quarter.

6.26 Special Licence Condition 3.8 requires the Licence Holder to demonstrate that emergency procedures in the ANSTO General Plans and Arrangements are adequate to cover accident scenarios related to Moata. A submission by ANSTO argued that the most likely accident scenarios are described in the Moata Descriptive Manual Safety Case, and these are all covered by the ANSTO Response Plan for Accidents and Incidents and the associated ANSTO Standing Operating Procedures.

### ANSTO Fuel Operations

6.27 A quarterly report on compliance with licence conditions was received.

6.28 ANSTO is developing a timetable for packaging the canisters storing plutonium dioxide powder into secondary containers that have been engineered for the purpose. This is expected to take place sometime in 2003 as the work needs to coincide with an IAEA safeguards inspection.

6.29 One Active Handling Supervisor and one Active Handler within Fuel Operations were accredited.

6.30 A full upgrade of the Building 23 Purification System ion-exchange columns progressed during the quarter. This includes replacing existing piping with stainless steel pipes and adding isolating valves to improve safety of the spent columns during transport and resin replacement. The draft Safety Analysis Report for the Building 23 fuel handling and storage operations was being reviewed within ANSTO before submission to ARPANSA, in response to a Special Licence Condition.

6.31 Two boreholes for monitoring groundwater were installed in April close to the Building 23 and 41 ponds, in compliance with a Special Licence Condition. The first samples were taken from these at the end of September as part of the ANSTO Environmental Management Plan. Results of the analyses will be reported in the next quarter.

6.32 Monitoring and maintenance activities related to spent fuel storage and handling

ponds were ongoing, with priority being given to reducing the radioactivity in the Building 23 ponds. Pond activity levels have been abnormally high since the Cropping Pond incident in March 2002. This rendered the facility out of service for standard fuel management activities, some of which have been moved to the Building 41 pond. Determining the root cause of the incident, and repair of the cropping machine, cannot be completed until radioactivity is reduced further.

- 6.33 Also ongoing was the investigation of a source of a small amount of water found behind the stainless steel liners of the Building 23 ponds.

#### ANSTO Waste Operations and Technology Development

- 6.34 The quarterly report was received on compliance with licence conditions, including updated waste inventories, along with an inventory of safeguarded material stored within a Waste Operations Facility.
- 6.35 The draft Safety Analysis Reports for the Waste Operations facilities were being reviewed by ANSTO before submission to ARPANSA. These reports are scheduled to be finalised by the end of June 2003.
- 6.36 With regard to modifications, Building 20B (extension of Building 20) construction is complete, the offices are occupied and the laboratories are being prepared for use. Approval will be sought from ARPANSA before the building becomes operational and the Waste Operations licence will be amended to include the additional facilities.

#### ANSTO Radiopharmaceuticals and Industrials

- 6.37 ANSTO Radiopharmaceuticals and Industrials (ARI) is licensed to operate four nuclear installations and one prescribed radiation facility under two licences (F0044-5A and F0044-5B). Licence conditions require ARI to submit quarterly reports to the CEO of ARPANSA. The quarterly report received covered the following areas:
- *Effective Control* – All approvals by the internal ANSTO Safety Assessment Committee were current. Regulatory Branch will conduct an audit in due course.
  - *Radiation Protection* – A Special Licence Condition requires periodic surveys of radiation dose rates in the vicinity of the National Medical Cyclotron (NMC) building. The ARI quarterly report mentioned that such a survey around the exterior of the building and the surrounding area occurred and the results retained by the NMC Health Physics Office. Regulatory Branch will conduct an audit in due course.
  - *Radioactive Waste Management* – There is a Special Licence Condition to ensure that processes and procedures for sampling and monitoring airborne discharges are in accordance with a recommended American Standard. The ARI report mentions that, under a service level agreement, Health and Safety Division is carrying out sampling and monitoring for airborne discharges. The report refers to document EM/TN-06/2002-rev 3 *Stack monitoring at ANSTO and comparison with International Guidelines prepared and submitted by Safety Division*. However, an audit will be conducted to ensure compliance with the recommended

standard.

- *Operational Limits and Conditions* – There is a Special Licence Condition to document the set of operational limits and conditions for Building 23A, Building 23, Building 54 and the Camperdown facility. ARI has submitted the set of operational limits and conditions for these facilities. The limits and conditions will be reviewed by ARPANSA's Regulatory Branch.

6.38 ARPANSA also received the ARI annual report for the period of July 2001 to June 2002 during the quarter.

#### Abnormal Occurrences at ANSTO's Nuclear Installations

6.39 The Regulatory Branch is notified of all abnormal occurrences at ANSTO's nuclear installations but only includes in this report those classified as Level 1 or above on the International Nuclear Event Scale (INES) as all others are of no safety significance. There were no Abnormal Occurrences at any of the nuclear installations classified as INES Level 1 or above notified by ANSTO in this quarter.

#### ANSTO Airborne Radioactive Discharges

6.40 Airborne radioactive discharges reported by ANSTO for the quarter remained less than the relevant notification levels under the discharge authorisation.

#### ANSTO Liquid Radioactive Discharges

6.41 Liquid effluent discharge reports covering weekly pipeline sample analysis of radioactivity for the period 26 June to 24 September 2002 were received and reviewed by Regulatory Branch. All measurements were less than the relevant trade waste limits authorised by Sydney Water under the ANSTO Trade Waste Agreement.

#### ANSTO Emergency Arrangements

6.42 A Regulatory Branch officer attended a meeting of the ANSTO Local Liaison Working Party, formed under the New South Wales *Emergency and Rescue Management Act 1989*, with a responsibility to maintain ANSTO emergency arrangements. The meeting reviewed distribution of the ANSTO emergency plan document.

#### Parks Australia North

6.43 Two Regulatory Branch officers conducted an inspection of Parks Australia North in July. This was a return visit to inspect improved waste storage arrangements, which were found to be acceptable, and also a number of abandoned mine sites and containments. Some of these were inaccessible on a previous visit due to weather conditions.

#### Australian Customs Service

6.44 An inspection was conducted of a pallet x-ray apparatus used by the Australian

Customs Service at Marrickville in Sydney. To improve efficiency, the Customs Service and the Australian Quarantine Inspection Service wish to authorise trained staff to operate controlled apparatus held by either organisation. A joint request was made for amendment of their source licences.

### Department of Defence

- 6.45 A review of Defence activities relating to security of radioactive sources commenced with initial efforts focusing on the Defence inventory of sources. The assessment of Defence facility licence applications neared completion, with Defence asked a series of questions relating to effective control of radioactive sources used and/or stored under contract.

### CSIRO

- 6.46 Notification was received that two divisions, Manufacturing Science and Technology and Building Construction and Engineering had been merged into the new division of Manufacturing and Information Technology. Compliance with outstanding special licence conditions was awaited before issuing a revised licence for the new division and requesting the surrender of existing licences.
- 6.47 A review of compliance with conditions of licence indicated a wide variation across the organisation in its response to licence conditions and reporting requirements. Detailed information was received on the substantial reorganisation of managing occupational health and safety within the CSIRO. It is anticipated that one result of this will be greater uniformity in response across the organisation.

## 7. International Liaison

- 7.1 Samir Sarkar from Regulatory Branch presented a paper, titled *Licensing of existing controlled facilities in Australia*, at the International Conference on Occupational Radiation Protection – Protecting Workers Against Exposure to Ionizing Radiation – in Geneva, Switzerland, from 26-30 August. He subsequently met with regulatory officers from Belgium, the Netherlands and the United Kingdom to discuss the licensing of radioisotope production facilities in their respective jurisdictions.

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28 January 2003