AUSTRALIAN COUNTRY REPORT

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Your Excellencies, Distinguished delegates, ladies and gentlemen, on behalf of Australia I am pleased to contribute to this the fourth meeting of the Forum for Nuclear Cooperation in Asia, which is being hosted by the Atomic Energy Commission of Japan.

1. Recent Events Related to Nuclear Science and Technology in Australia

Through the Australian Nuclear Science and Technology Organisation (ANSTO), the Australian Government provides access to core nuclear-based facilities in Australia and overseas for the benefit of industry and the Australian research and development community. The major facility access is ANSTO's nuclear research reactor which is utilised for strategic, industrial, environmental and research purposes, and manufacture of nuclear medicines and other forms of radioisotopes. The importance of nuclear science and technology to Australia is evidenced by the Government's commitment to, and support for, the replacement research reactor (RRR) project. In 2006 the RRR is scheduled to take over from the existing HIFAR reactor, which has operated safely for 45 years at the Lucas Heights Science and Technology Centre. The budget for the RRR is $286.4 million (1997 value) and is historically the largest investment by an Australian Government for a single research facility.

In addition to the RRR, two major upgrades of ANSTO facilities were foreshadowed in the Government budget handed down in June 2003. The first project will be a new main entrance at the Lucas Heights Science and Technology Centre costing more than $10 million dollars. This is the result of a reassessment of security measures at the site. The second is the redevelopment of the Radiopharmaceutical Production Building where radioisotopes are processed for use in nuclear medicine. The changes will provide modern quality controlled chemistry laboratories, a sterilisation room, service and instrument rooms, production clean room facilities and component wash bays. Subject to parliamentary and regulatory approval, the construction will commence in late 2003 and will be completed in 2005 in time to ensure utilisation of the increased capacity of the replacement reactor.

1.1 Replacement Research Reactor

As reported at the first FNCA in Bangkok, ANSTO signed a contract in mid-2000 for the design, construction and commissioning of a 20 MW research reactor with the Argentine company INVAP S.E. which in turn has arrangements with a number of Australian engineering companies. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) issued a construction licence for the reactor on 5 April 2002 and construction commenced on 11 April 2002. It is proceeding to schedule, with the loading of fuel expected to commence in 2005 and to be complete in 2006.

The RRR will achieve neutron flux performance levels at least ten-times higher than those of HIFAR. In particular, this extra performance stems from state-of-the-art neutron guides, which will have modern "supermirror" coatings. A major emphasis is on the establishment of a suite of neutron beam instruments whose performance will be competitive with the best facilities anywhere in the world. In addition to good thermal neutron beams, there will be a large state-of-the-art liquid deuterium cold-neutron source and two thermal and two cold supermirror guides feeding a large modern guide hall, in which most of the instruments will be placed. While there will be space for up to 18 instruments, the project has funding for the following initial set of eight instruments comprising diffractometers, spectrometers, reflectometers and small angle scattering (SANS).

Seven out of the eight instruments have now been specified and designed. These will be ready for use when the reactor is fully operational in 2006. The facility will have the capacity for further expansion, including the potential for a second neutron guide hall.

The Government has endorsed it becoming a regional centre of excellence, and we are already having discussions with countries in the region on the use of the facility. In 2002, ANSTO established the Bragg Institute to build on its work in neutron scattering and the use of x-rays by forging extensive linkages between ANSTO and other national and international organisations. Further development of applications of neutron and x-ray techniques is expected to lead to increased partnerships in research and in business.

In July 2003, it was announced that a major Australian construction company, Thiess, has been selected to construct the building to house the Australian Synchrotron at the Monash University site in Victoria and would be commencing work shortly. The decision to establish the first Australian national synchrotron facility was announced in July 2001. It will be 67 metre in diameter with capacity for 30 plus beamlines. The total cost of the project is A$206 million and it is expected to be commissioned in 2007.

The Australian Synchrotron Research Program (ASRP) provides Australian researchers with access to state-of-the-art synchrotron radiation research capabilities at overseas synchrotron light source

facilities. These are the Australian National Beamline Facility (ANBF) at the Photon Factory, Tsukuba Science City, Japan, and the Advanced Photon Source, at the Argonne National Laboratory in Chicago, USA. The ASRP was funded for five years under the Major National Research Facilities program, announced in December 1995.

The ASRP maintains staff at both the Photon Factory and the APS, and provides travel and subsistence funding to Australian researchers using the facilities. Access is via a peer reviewed proposal system.

1.2 Radioactive Waste Management

Australia does not generate any high level radioactive waste.

Currently some 500 cubic metres of intermediate level waste are being stored in a variety of sites around the country. At this stage, the most appropriate way to manage this waste is to house it in a purpose-built aboveground storage facility since a geological repository for disposal cannot be justified because of the limited amount of intermediate level waste likely to be generated by Australia in the foreseeable future. The Government announced in 2000 that there would be a national search for a suitable site for the store. Because of a lack of support from some States, the Government decided that it would proceed with the search but only on Commonwealth land and for the storage of intermediate level waste generated by Commonwealth Agencies. The national store will be designed to operate for at least 50 years.

An independent, expert advisory committee, the National Store Advisory Committee, has been appointed to advise on this search. The experts have been chosen on the basis of their expertise in the fields of radiation protection, and in other disciplines relevant to the site selection study. Thus the final decision on the site for the store will be the result of a rigorous scientific assessment. Following assessment of Australian Government land around Australia, the National Store Advisory Committee has submitted a short-list of sites to the Government for further consideration. No sites in South Australia have been identified as being highly suitable for the national store. Accordingly, early in May 2003, the Government ruled out South Australia as an option. An announcement of a short-list for further investigation is expected in the next few months.

For the low-level radioactive waste, the Government has determined that there should be a single national repository. An extensive and thorough site selection process has been taking place over the past ten years. In the first phase a methodology was established for site selection. The second phase applied the methodology and identified a short list of eight regions. The third phase identified the central-north region of South Australia for further investigation and site selection studies. 18 sites

were identified in June 1998. These were reduced to five and then a preferred site with two alternatives.

Before construction of the low-level radioactive waste repository can commence, the preferred site must comply with an environmental impact assessment (EIS) and radiological licensing processes. A Draft EIS was prepared and was open for public comment for three months as from July 2002. It was subsequently amended and submitted to the Minister for the Environment and Heritage. In May 2003 the Minister gave environmental approval, subject to conditions, to two possible sites in accordance with the provisions of the *Environment Protection and Biodiversity Conservation Act 1999*.

In July 2003 the Government announced its acquisition of the national repository site, Site 40a near Woomera in South Australia and its associated access route and in August 2003 the Minister for Science announced that the Government had applied to the independent regulator, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) for a facility licence to authorise the following three activities:

- to prepare Site 40a for the proposed National Radioactive Waste Repository (NRWR);
- to construct the proposed NRWR; and
- to operate the proposed NRWR.

ARPANSA is undertaking an independent peer review of this licence application and supporting documents and the International Peer Review Team comprising individuals from various Member States of the International Atomic Energy Agency (IAEA) with expertise in the storage and management of radioactive waste have been assembled to facilitate this. The review commenced in late October 2003 and it is expected to conclude in November 2003. The final report from the International Peer Review Team will be presented to the CEO of ARPANSA and will be made public shortly afterwards.

The repository is provisionally anticipated to commence operations around 2005.

The Government has indicated that it has no intention of accepting any radioactive waste from other countries for storage or disposal in Australia

2. Recent Regional Cooperation Activities under FNCA

Australia has been pleased to continue its support for FNCA activities in the areas of nuclear safety culture and radioactive waste management.

2.1 Safety Culture Workshop

The seventh Nuclear Safety Culture Workshop for 2003 is scheduled to be held in Daejeon, Korea in February 2004.

The sixth FNCA Safety Culture Workshop, which was held in Dalat, Viet Nam in January 2003, was assessed by the Australian participants as being very successful. During the workshop considerable input was provided by the representatives from all the eight participating countries. This very active participation facilitated the achievement of the workshop's aims and objectives.

A key feature of this workshop was the production of safety status reports on specific research reactors in each country. The one-day peer review process of the Dalat Nuclear Research reactor went well and covered a lot of ground. Although this was the first such review to be undertaken under the FNCA programme and was essentially a trial process, we believe that the peer review was very successful and real and meaningful outputs were achieved. This was supported by the participants who have agreed to continue the peer review and the self-assessment reporting at the seventh workshop.

Information on the required preparations for the next workshop has been sent out to all countries. The Korean delegate has undertaken to make a proposal on possible rationalisation of the reporting indicators. The delegate from The Philippines has undertaken to make a proposal on extending the project to Radiation Safety Culture. A major focus of this workshop will be the peer review of the HANARO reactor's self-assessment report.

Australia believes that these workshops are providing a valuable opportunity for encouraging initiatives in safety culture, but some interaction with the IAEA is needed to ensure that activities in safety culture are not duplicated for the region.

2.2 Radioactive Waste Management

Australia participated in the Radioactive Waste Management (RWM) Workshop held in Korea in November 2002, Since then a draft 3-Year Work Plan has been prepared and under this it was proposed that the RWM Task Group would focus on NORM waste issues over the next 2 years (2003/2004). Australia was pleased to host the visit by the Task Group on TENORM waste between 10 and 14 February 2003. The Task Group comprised Prof. Toshiso Kosako (Japan Project Leader, RWM), Tokyo University; Prof. Takao Iida, Nagoya University; Dr, Hirokuni Yamanisi, National Institute of Fission Science; Dr. Takeshi Iimoto, Tokyo University; and, Dr. Nobuyiki Sugiura, Tokyo University, and was sponsored by MEXT. The Task Group, held preliminary discussions with a number of technical experts in Australia, including representatives from ANSTO and the New South Wales Environment Protection Agency. In addition there was a visit to the large Olympic Dam

Project mining operations site at Roxby Downs, South Australia. A wide range of topics were discussed concerning NORM in the Mining Industry, including international regulations and disposal.

Australia is planning to participate in the next FNCA RWM Workshop scheduled to be held between 15 and 19 December in Jakarta, Indonesia. In addition to the Country Report, the Australian Project Leader will present papers on aspects of the disposal of LILW and the management of waste arising from decommissioning of small to medium scale nuclear facilities.

Australia welcomes the progress achieved by the cooperation in this area and will continue to participate in the activities of the radioactive waste management workshop.

2.3 Small Angle Neutron Scattering (SANS)

Australia regrets that it is not able to participate in the Neutron Scattering Sub-workshop scheduled for held in Serpong, Indonesia in January 2004, because of the intense activity associated with the establishment of the new neutron facilities for the RRR.

As we have stated previously, we encourage the sub-workshop's initiatives to establish an effective communication system, based on group email, and a project proposal and review system as well as the focus of the activities from Small Angle Neutron Scattering (SANS) instrumentation and techniques development, to the investigation of problems of socio-economic benefit to the region

ANSTO played an advisory role in the development of the sub-workshop's regional research project. Our expertise in SANS data analysis and interpretation may be particularly relevant for the planned efforts on ?-irradiated carrageenan (food gum), water-soluble copolymers, random ionomers and blends of natural rubber and polyolefins. Such data analysis would be shared between regional groups with relevant expertise.

3. Conclusion

Australia has a policy of on-going support and encouragement of mutual cooperation in the utilisation of nuclear science and technology for the benefit of the region and for addressing identified regional problems. I look forward to us continuing to play an active role in the FNCA and its programme.

On behalf of Australia I again thank the Atomic Energy Commission of Japan for their efforts in facilitating this important Forum meeting,