CHAPTER FIVE

THE NEW RESEARCH REACTOR — THE NATIONAL INTEREST

Australia's involvement in nuclear non-proliferation

5.1 In this chapter, the Committee discusses nuclear disarmament as a priority in Australia's foreign policy and reviews Australia's participation in nuclear non-proliferation activities. It assesses the validity of the claims made by the Department of Foreign Affairs and Trade, the Australian Safeguards and Non-proliferation Office, and the Commonwealth Government that the new reactor and the nuclear expertise it fosters is vital to the national interest. It considers the place of politics and diplomacy in advancing nuclear disarmament, Australia's role in the International Atomic Energy Agency, and the expanding nuclear industry in the Asia-Pacific region. Finally, the Committee looks at national interest in a broader context that goes beyond security issues and examines the growth and development of nuclear technology in the region and its use in industry, health and the environment.

5.2 At the moment, Australia's foreign policy recognises that Australia as a medium-sized power must concentrate its involvement in international matters where its interests are closely engaged. It has identified nuclear non-proliferation, especially in the Asia Pacific region, as a very important concern.[1] Australia has a fundamental security interest in a widely accepted and effective non-proliferation regime which offers Australians the assurance that nuclear weapons are not being acquired by countries or terrorist groups which could use such weapons against them.[2] In brief, it is in Australia's national interest to ensure that its neighbourhood remains free of nuclear weapons and that countries in the region adopt and further cultivate a nuclear safety culture.

5.3 Over the years, Australia has made a significant contribution to establishing an international regime to prevent the proliferation of nuclear weapons and to prohibit nuclear testing. It has pledged to concentrate its future efforts on ensuring that this regime is implemented, remains effective and is strengthened.[3]

5.4 In pursuing its commitment to nuclear disarmament, Australia has often taken a prominent lead in non-proliferation treaty negotiations and in measures to inhibit the development of weapons of mass destruction. Australia ratified the Non-Proliferation

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1 Commonwealth of Australia, *In the National Interest: Australia's Foreign and Trade Policy*, White Paper, 1997, p. 50.

2 DFAT, submission no. 27 to the Senate Economics References Committee, p. 1.

3 Commonwealth of Australia, *In the National Interest: Australia's Foreign and Trade Policy*, White Paper, 1997, pp. 2, 40.

Treaty in 1973 and began concluding bilateral safeguards agreements in 1977.[4] The leadership it demonstrated in establishing the Canberra Commission on the Elimination of Nuclear Weapons earned it world-wide recognition and further strengthened its credentials as a determined advocate for nuclear non-proliferation.[5] Currently, Australia is working to encourage the early commencement of negotiations on a treaty to prohibit the production of fissile material for weapons purposes.[6]

A research reactor and political credibility

5.5 Some witnesses to the inquiry consider that Australia's influence in nuclear disarmament is constrained because it has positioned itself firmly within the global nuclear community. They argue that by building a modern research reactor, Australia is sending the wrong message—that it is sabotaging its own attempts to encourage nuclear non-proliferation. In brief, they maintain that Australia's participation in the international nuclear industry is 'problematic at best and counterproductive at worst'.[7]

5.6 Rather than join the 'Nuclear Club', which they maintain is costly and increases international tension, they suggest that the cheaper option and better example would be to cease uranium and thorium production and export, and dispense with associated technologies in favour of more sustainable power sources.[8]

5.7 To counter this view, DFAT maintains that many states active in non-proliferation efforts, including members of the New Agenda Coalition, have nuclear power and/or research reactors.[9] It notes that the distinction between nuclear technology for peaceful purposes and nuclear technology for military purposes is an important one and argues that nuclear programs involving only the operation of research reactors or power reactors do not constitute a proliferation concern.[10]

5.8 The Committee acknowledges that there is a division between nuclear technology for peaceful uses and for military purposes. It also recognises the concerns of some people that countries might, under the guise of the peaceful use of atomic energy, covertly build up a nuclear weapons capability. The Indian and Pakistani nuclear tests in 1998 alerted the world to this possibility. The Committee, however,

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4 Ian Briggs, 'National Viewpoints: views on strengthened safeguards from Australia, Cuba and South Africa', *IAEA Bulletin*, vol. 41, no. 4, 1999, p. 24; Governor-General's Speech, *Senate Debates*, 27 February 1973, p. 7.

5 Published in August 1996, the Canberra Commission Report, which provides a framework for universal nuclear disarmament, stands as a respected reference document and a starting point for discussion on nuclear disarmament.

6 Attachment A, DFAT, Answers to questions on notice, 13 December 2000.

7 Mr Cameron Schraner, submission no. 56.

8 Mr Neil Macdonald, submission no. 10.

9 Following the Indian and Pakistani nuclear tests in 1998, Sweden, Ireland, Brazil, Egypt, Mexico, New Zealand, Slovenia and South Africa formed a coalition known as the 'New Agenda Coalition'. Their main aim was to 'rekindle the will of the international community for nuclear disarmament'.

10 DFAT, Answers to questions on notice, 13 December 2000, p. 13.

does not accept the proposition that the construction of a new research reactor, of itself, will tarnish Australia's reputation as a staunch advocate for nuclear disarmament and an international safeguards system.

Expertise in nuclear science and technology and non-proliferation and nuclear safeguards systems

5.9 The Department of Foreign Affairs and Trade (DFAT) argues that Australia has had an influential voice in the non-proliferation regime and in strengthening international safeguards because of its strong expertise in nuclear science technology and its reputation for advancing practicable, achievable concepts in this area.[11] It believes that the maintenance of nuclear expertise, underpinned by the operation of a multi-purpose nuclear research reactor, is important to Australia's national interest and that this expertise in nuclear science and technology cannot be substituted by other means.[12] It told the Committee:

> Australia's security interest lies in ensuring it has a comprehensive understanding of international nuclear developments and nuclear technologies, both military and peaceful. These are important and highly sensitive technologies, and Australia must—as a developed, substantial and self-respecting nation—be in a position, we believe, to independently assess their implications for us.
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> Australia must—traditionally, and this is our own view and a bipartisan government view—maintain a strong position on non-proliferation developments. Our forward role in this is acknowledged and appreciated internationally. We obviously need to do this from a position of knowledge. The quality of our active participation in international non-proliferation efforts is directly correlated with our ability to assess and understand the technology. It vests us with credibility.[13]

5.10 In considering nuclear safeguards, DFAT was equally certain of the need for Australia to maintain nuclear expertise. Mr Bill Paterson, First Assistant Secretary, International Security Division, DFAT, told the Committee that the Australian Safeguards and Non-proliferation Office (ASNO) draws on ANSTO's understanding of standards and best practice in the nuclear industry and that ANSTO's capability is built up and maintained through reactor operation.[14]

5.11 In brief, DFAT argues that without the broad multidiscipinary range of expertise developed and maintained by the operation of a research reactor, Australia's influence in regional and international nuclear non-proliferation affairs would be

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11 Mr John Carlson, *Committee Hansard*, 27 October 2000, p. 309.

12 Mr Bill Paterson, *Committee Hansard*, 27 October 2000, p. 307.

13 ibid, pp. 307–8.

14 ibid, pp. 308–9. Again, DFAT argues that Australia's effectiveness in advancing practical, achievable concepts addressing nuclear safety matters stems from its strong expertise which in turn comes from having a strong national nuclear science base.

substantially weakened.[15] It submits that by running down its nuclear competence, Australia would lose much of the credibility it now has in multilateral nuclear disarmament forums.[16]

5.12 In its mission statement, ANSTO clearly asserts that one of its primary goals is to provide scientific and technical advice across the nuclear fuel cycle to government and to support Australia's national strategic and nuclear policy objectives.[17] As the prime provider of nuclear technical advice to the Government, it argues that it has a vital role in advancing Australia's interest in nuclear weapons non-proliferation.

5.13 To provide this high quality advice, ANSTO maintains that it needs the resources to develop and maintain a pool of nuclear science experts with the necessary operational, scientific and safety skills and experience.[18] It holds that a new reactor is crucial to preserve this needed level of nuclear technical expertise.

5.14 Up to this point, DFAT and ANSTO have merely asserted that for Australia to make a worthwhile contribution to nuclear weapons non-proliferation and to the establishment of an effective nuclear safeguards system, it needs a core of experts in nuclear science and technology. To develop this core, they argue, Australia needs a nuclear research facility. There is an appealing logic underpinning this assumption that links a research reactor with nuclear science and technology expertise with the ability to participate actively in nuclear disarmament. The Committee, however, finds that no such strong connection has been demonstrated.

5.15 Indeed, the first part of this report shows that the main work undertaken at Lucas Heights relies on the reactor as a research tool and not as a training ground for nuclear scientists. In outlining the history of HIFAR, the Committee found that research based on neutron scattering together with the production of radioisotopes and associated research is far and away the most important work at Lucas Heights.

5.16 Moreover, a number of scientists who use HIFAR as a neutron beam source, nuclear medicine practitioners and people from industry using radioisotopes produced at Lucas Heights presented evidence that demonstrated the close link between their work and the reactor. In contrast, the Committee finds that DFAT failed to establish any such definite connection between the research reactor and Australia's contribution to nuclear non-proliferation.

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15 Mr Bill Paterson, *Committee Hansard*, 27 October 2000, p. 309.

16 DFAT, submission no. 141, p. 6.

17 ANSTO, *Annual Report 1999–2000*, p. iv. The nuclear fuel cycle comprises all stages of the production, use for power generation, and disposal of nuclear fuel, including uranium mining and milling, conversion, enrichment, fuel fabrication, spent fuel storage, reprocessing and waste disposal. This definition is taken from http://www.dest.gov.au/ssg/fact_sheets/fs_cycle.html (7 January 2001).

18 ANSTO, 'Overview of Proposed Replacement Nuclear Research Reactor', http://ansto.gov.au/ansto/RRR/eis_overview.html (18 August 2000).

Nuclear science expertise, political skills and international diplomacy

5.17 Few would challenge the proposition that it is in Australia's national interest to be a well-informed and active participant in nuclear non-proliferation and safeguards measures. Indeed, those who believe that there is no justification for the new research reactor on national interest grounds generally recognise Australia's positive contribution to promote nuclear weapons non-proliferation. They, however, take issue with the assertion that Australia needs a modern research reactor to have an effective role in nuclear disarmament matters. Most notably, they reject the suggestion that activities such as negotiating agreements, setting standards and strengthening safeguards is conducted at a level of detail that requires nuclear science expertise developed at home.[19]

5.18 Greenpeace Australia is among those who refute the argument that possession of a reactor is fundamental to Australia's active engagement in non-proliferation measures. Mr Stephen Campbell maintains:

> If Australia does not proceed with a second reactor, safeguards and non-proliferation work would not have to be stopped. Safeguards and non-proliferation are governed far more through existing treaties and agreements.[20]

5.19 Dr Susan Wareham, President, Medical Association for Prevention of War (Australia), also questioned the connection made between the need to have nuclear technology expertise and the ability to have a significant role in nuclear disarmament and non-proliferation.[21] In her view, the main barrier to non-proliferation is political rather than technical.[22] She stated:

> If Australia is serious about non-proliferation we do not need a $300 million reactor to prove our credentials and offer technical knowledge. We need to address the problem and its root cause by striving for the elimination of all nuclear weapons.[23]

5.20 One witness, Professor Richard Broinowski, a former Australian diplomat, is well placed to comment on this matter. He drew attention to the solid work that Australia has done in international diplomacy on promoting nuclear non-proliferation and acknowledges that Australia was at the forefront of reaching an agreement on the Comprehensive Test Ban Treaty and of getting an indefinite extension to the Non-

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19 Submission no. 6, Senate Economics References Committee, p. 7.

20 Mr Stephen Campbell, *Committee Hansard*, 25 October 2000, p. 102.

21 Dr Susan Wareham, *Committee Hansard*, 27 October 2000, p. 265.

22 ibid.

23 ibid.

Proliferation Treaty.[24] Further, he points out that officers working in this area are not nuclear-trained scientists but diplomats.[25]

5.21 Professor Broinowski claims that an effective safeguards system against nuclear weapons proliferation depends more on political intelligence than reactor based technical expertise. More fully, he maintains that an effective nuclear safeguards regime depends on matters such as an awareness of a state's nuclear related activities and the extent to which monitoring agencies have physical access to relevant locations for independent verification of these activities. Moreover, he argues, the will of the international community to take action against non-complying states is crucial to the success of a safeguards system.[26]

5.22 Ms Jean McSorley supports this view. She noted that in nuclear non-proliferation and safety systems much ground work has been done, but that the areas calling for improvement are political not technical, particularly in the need to have increased inspector access, national compliance and increased funding. She states further that even where technical areas are involved, the knowledge required to deal with these problems does not come from reactor operations. To underline the central role of politics in non-proliferation and nuclear safety, she cites the key elements of the International Atomic Energy Agency Programme 93+2 which is aimed at developing capabilities to detect undeclared nuclear activities. They include:

- expanded declarations by states of nuclear related activities and plans;
- extended access by IAEA inspectors both around nuclear facilities and to locations identified in expanded declarations; and
- use of new technology, particularly environmental sampling and analysis.[27]

5.23 Indeed, a recent Senate Inquiry into the India and Pakistan nuclear tests found that one of the major impediments to nuclear non-proliferation is the slow progress being made by the nuclear weapons states to reduce their nuclear arsenals.[28] It noted that their failure to move decisively in this direction puts at risk the advances made in the area of nuclear disarmament. This clearly is a political matter and one where Australia, as a country with recognised credentials in the field of nuclear disarmament, might have some influence.

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24 SBS, 'Insight', transcript, 10 August 2000.

25 ibid.

26 Professor Richard Broinowski, *Committee Hansard*, 27 October 2000, p. 293.

27 See Ms Jean McSorley, submission no. 122C and 'Current and future safeguards developments; current actions for strengthening of IAEA safeguards', DFAT, http://www.dfat.gov.au/aso/topics/strength/htm (15 January 2000). See also Dr Susan Wareham, *Committee Hansard*, 27 October 2000, p. 266.

28 Senate Foreign Affairs, Defence and Trade References Committee, *The 1998 Indian and Pakistani Nuclear Tests*, June 1999, pp. 136, 139.

5.24 ASNO and DFAT do not see the political and technical aspects of nuclear issues as distinct and separate. DFAT asserts that at both the political and diplomatic levels, Australia uses all appropriate opportunities, multilaterally and bilaterally, to advance the adoption of the strengthened IAEA safeguards system. It submitted:

> International respect for the expertise that resides in Australian nuclear agencies, derived largely from the operation of the research reactor, underpins Australia's participation in nuclear issues, at the technical and diplomatic level.[29]

5.25 DFAT stresses that it draws on the advice of experts from within ANSTO, ASNO and ARPANSA when formulating Australia's positions on non-proliferation and disarmament issues, including treaties.[30] Professor Garnett emphasises the point that policy makers draw on the technical expertise of the staff at ANSTO.[31] She notes that people from ANSTO are seconded to various agencies dealing with nuclear issues such as the standing committees with the IAEA and their contribution relies on their expertise and training in nuclear matters. She stated:

> Indeed, we get asked many, many times over the weeks for advice into these sorts of political aspects from technical experts…a reactor is the very basis of that expertise.
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> …it's the science and technology and the work that's done at Lucas Heights which also provides the credibility Australia has in the international arena.[32]

5.26 Mr John Carlson, Director General, ASNO placed particular importance on Australia's ability to provide workable solutions. He stated: 'It is all very well to promote political concepts for disarmament or for containment of nuclear proliferation, but what is important is to be able to put forward ideas that can actually be implemented and will be effective.'[33]

5.27 DFAT argues that Australia's role in the development of strengthened IAEA safeguards in the wake of the discovery of Iraq's nuclear program after the Gulf War provides a concrete example of the importance of a research reactor to such activities. DFAT explained Australia's role to the Committee:

> As part of Australia's major, practical contribution to the development of strengthened safeguards, we have been able to make the Lucas Heights site available to the IAEA for field trials to help validate new safeguards techniques. For example, because of its varied operating history, the Lucas

29 DFAT, Answers to questions on notice, 13 December 2000, p. 12.

30 ibid, pp. 12, 15.

31 SBS, 'Insight', transcript, 10 August 2000.

32 ibid.

33 Mr John Carlson, *Committee Hansard*, 27 October 2000, p. 314.

Heights site was particularly useful in validating the use of environmental sampling techniques for safeguards.[34]

5.28 The Committee recognises that Australia is providing useful support for international agencies in their efforts to make the world safe from nuclear weapons proliferation. It also acknowledges that expertise in nuclear science and technology helps in making informed decisions about certain aspects of nuclear non-proliferation and nuclear safeguards systems.

5.29 The Committee, however, finds it difficult to measure and quantify any substantial contribution that the research reactor has in Australia's overall efforts toward nuclear disarmament. Rather, this appears to be an instance where suitcase science offers a satisfactory alternative to a local research facility. The Committee suggests that if the need arose for DFAT officers to have an understanding of a particular nuclear issue, it could either recruit personnel or engage specialist consultants from overseas, or second their officers to relevant overseas institutions to obtain the required knowledge.

5.30 Further, the Committee is not convinced that Australia needs a high level of specialisation in nuclear science and technology to make a positive contribution to nuclear disarmament. It notes the view that there are significant advances to be made in nuclear non-proliferation using political and diplomatic skills particularly in encouraging the nuclear weapons states to reduce their nuclear weapons and for countries to agree to be more open for nuclear weapons inspections. Australia has played a more prominent role in recent years in promoting disarmament and nuclear non-proliferation despite the fact that we have only an outdated small research reactor by world standards and we do not possess nuclear power plants, re-processing plants or nuclear weapons.

5.31 Moreover, as shown earlier, Australia has gained international recognition for its work in nuclear disarmament in the political and diplomatic spheres for example with its initiative in setting up the Canberra Commission on the Elimination of Nuclear Weapons. The Committee suggests that Australia look to build on this type of active involvement.

International Atomic Energy Agency

5.32 Acknowledging its limitations as a medium-sized country, Australia accepts that many of its security objectives can be achieved only in cooperation with others. It looks to work collaboratively with other like-minded countries to achieve its goals in global nuclear disarmament and in establishing an international safeguards system.[35] DFAT regards the IAEA as the most effective platform for pursuing Australia's

34 DFAT, Answers to questions on notice, 13 December 2000.

35 Commonwealth of Australia, *In the National Interest: Australia's Foreign and Trade Policy*, White Paper, 1997, p. 50.

nuclear non-proliferation and safeguards policies.[36] Australia is a founding member of the IAEA and was one of the first countries to ratify its statute in 1957.

5.33 The IAEA was established with the dual mandate to promote the peaceful uses of nuclear energy and to prevent the spread of nuclear weapons. It seeks to maximise the ability of Member States to make full use of nuclear technology for their economic and social development.

5.34 The Agency's activities in the field of nuclear technology cover a wide front and are not confined to safeguards monitoring. Indeed, Mr Mohamed Elbaradei, Director General of the IAEA, explained that the first pillar of the Agency's work is to promote human welfare through nuclear application. In 1999, he stated that the Agency intended to redouble its efforts to 'respond to the priorities of our developing Member States to increase food production, fight disease, manage water resources and monitor and protect the environment'. He cited examples of work being done in Africa to develop an isotope based technique that will reduce the period for the diagnosis of a new drug resistant strain of tuberculosis from weeks to days.[37]

5.35 The second pillar of the Agency's work is in nuclear radiation and waste safety. According to the IAEA, it is making an important contribution to the development of an effective worldwide safety regime through international conventions prescribing the basic legal norms for the safe use of nuclear energy; internationally accepted safety standards; and measures to assist States in the implementation of these conventions and standards.[38]

5.36 One of the IAEA's major concerns is associated with the wastes generated by the use of nuclear power and the wastes from nuclear applications in medicine, agriculture and industry. In particular, the IAEA is aware of the considerable potential increase in the volume of the wastes from the imminent decommissioning of a number of nuclear power and research reactors.[39]

5.37 The third pillar of the IAEA is the verification and the security of nuclear material to prevent, detect and respond to illegal uses of nuclear and radioactive material. For over 40 years, the IAEA has developed its safeguards monitoring regime that has been effective in verifying States' nuclear non-proliferation commitments.[40]

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36 Mr Bill Paterson, *Committee Hansard*, 27 October 2000, p. 308.

37 Mohamed Elbaradei, Director General, Statement to the General Conference, Vienna, 27 September 1999, http://www.iaea.org/worldatom/Programmes/Safeguards/Statements/1999/ebsp1999n010.shtml (11 September 2000).

38 ibid.

39 ibid.

40 Keynote Address by Deputy Director General for Safeguards, Pierre Goldschmidt, 'IAEA Safeguards: Evolution or Revolution?', Institute of Nuclear Materials Management, 41st Annual Meeting, 17 July 2000, http://www.iaea.org/worldatom/Programmes/Safeguards/Statements/inmm_speech.shtml (11 September 2000) and Mohamed Elbaradei, Director General, Statement to the General Conference, Vienna, 27 September 1999, http://www.iaea.org/worldatom/Programmes/Safeguards/Statements/1999/ebsp1999n010.shtml (11 September 2000).

Australians have been involved with the IAEA's safeguards system since the first plenary meeting of the Conference on the IAEA Statute in 1956.

5.38 Australia has been a member on the IAEA Board of Governors, a 35-member body, since 1957. Without doubt, Australia's seat on this Board enables it to have a voice in this major policy making body on issues relating to the peaceful uses of nuclear energy, including the development of safeguards and safety standards. Mr Paterson from DFAT noted that Australia's effectiveness on the IAEA Board is directly related to its credibility, which, in turn, relates to Australian nuclear science expertise.[41] Professor Garnett reinforced this viewpoint. She stated:

> It isn't that we just have a reactor; it isn't that we just have uranium deposits; it's in fact the technical expertise and the participation in a technical way in the Agency, in its committees, that underpins our Board of Governors seat. [42]

5.39 Indeed, there is a connection between experience in nuclear matters and membership of the Board. Of the Board members, 13 are designated and 22 are elected. Australia is a designated member and represents the South East Asia and the Pacific region.[43] Designated members of the board are defined as 'the most advanced in the technology of atomic energy, including the production of source materials'.

5.40 The Medical Association for Prevention of War was among those who dispute the assertion that Australia would lose its seat on the Board of Governors if it did not have a nuclear research reactor.[44] Dr Richard Leaver also suggests 'any loss of competence in nuclear science is not likely to see Australian governments stripped of their IAEA seat'. He argues that much of Australia's contemporary standing within the IAEA stems from Australia's position as a leading international supplier of uranium and as an advocate of improved safeguards over uranium transfers.[45]

5.41 In this context, the Committee notes that there has never been a challenge to Australia's position on the Board[46] and a new research reactor does not necessarily guarantee that Australia will retain this position. Moreover, membership of the Board, of itself, is not a sufficient reason to justify a project costing close to $300 million and with a waste management problem yet to be satisfactorily resolved.

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41 Mr Bill Paterson, *Committee Hansard*, 27 October 2000, p. 308.

42 SBS, 'Insight', transcript, 10 August 2000.

43 Members of the South East Asia and the Pacific Region comprise Australia, Indonesia, Malaysia, Marshall Islands, Myanmar, New Zealand, Singapore and Thailand.

44 Dr Susan Wareham, *Committee Hansard*, 27 October 2000, p. 266.

45 Dr Richard Leaver, submission no. 111, pp. 3–4.

46 Mr Bill Paterson, *Committee Hansard*, 27 October 2000, p. 316.

5.42 Even were Australia to lose its seat on the Board, some ask if this would be such a loss anyhow.[47] A number of witnesses question the contribution that Australia's presence on this Board makes to international developments of the nuclear industry, particularly non-proliferation. Some ask whether Australia's participation makes any difference or 'would the situation be any worse if Australia were not involved?'[48]

5.43 Professor Max Brennan, former chair of the Australian Research Council, believes that Australia has had some leverage through the IAEA where several Australian scientists are on the various committees that are concerned with aspects of nuclear safety. As noted earlier, the IAEA is involved in all aspects of nuclear technology where, according to Professor Brennan, Australia's significant input depends on the nuclear science and technology capacity in Australia.[49]

5.44 The Committee acknowledges that, by being a member of the IAEA Board of Governors, Australia may be better placed to make a contribution to the formulation of policies on nuclear non-proliferation and in the areas of nuclear safety and the application of nuclear technology for peaceful purposes. It draws attention, however, to the many working groups within the IAEA that provide Australia with a range of opportunities to be involved in the work of this major agency.

Australia's role in the region

5.45 As noted earlier in the chapter, Australia's main foreign policy concerns centre on the Asia-Pacific region. The trend in this region is toward a greater reliance on nuclear technology where new research reactors are being built or are planned, and the preparation for an expansion of nuclear power plants continues, particularly in China, India, Japan and the Republic of Korea. According to the IAEA, this is a region where the use of nuclear power is likely to grow over the short term.[50]

5.46 DFAT asserts that the growing competence of other regional countries in nuclear affairs and their development of nuclear programs is relevant to Australia. It noted:

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47 Dr Susan Wareham, *Committee Hansard*, 27 October 2000, p. 266.

48 Mr Cameron Schraner, submission no. 56.

49 Transcript, 'Lateline', 10 June 1997.

50 E. Bertel and H. Umezawa, 'Beneficial uses of Isotopes', Newsletter, Nuclear Energy Agency, vol. 16, no. 1, 1998, p. 16 and IAEA Annual Report for 1999, http://www.iaea.org/worldatom/Documents/Anrep/Anrep99/ (11 September 2000), p. 2. See also IAEA, *Nuclear Technology Review*, update 2001, which looks specifically at research reactors. It reported: 'the number of operating research reactors in industralised countries peaked in 1975 and has decreased steadily ever since. In contrast, the number of operating reactors in developing countries increased through 1990 and appears to have since levelled off. It goes on to explain: 'this pattern reflects the nuclear field's evolution from a relatively new science into an established technology. It does not mean, however, that new research reactors are unnecessary—nine are currently under construction and seven more planned. For the most part these are innovative, multipurpose reactors designed to produce high neutron fluxes.'

> The expansion of civil nuclear technology in the Asia Pacific region reinforces the value of maintaining Australian expertise in nuclear fuel cycle matters. Developing countries in the region are becoming more technologically advanced in some aspects of nuclear technology than Australia. Australia's continuing operation of a major research reactor would provide a base for us to participate actively, well into the next century, in regional and bilateral cooperation arrangements, involving research reactors and related ancillary technology and techniques, in the expanding nuclear programs in the Asia-Pacific region.[51]

5.47 It also refers to the strong potential growth in nuclear power generation in Asia and ongoing shipments of radioactive material through the region. DFAT stresses that it is in Australia's national interest to ensure that national standards for nuclear safety are rigorous and universally accepted. It argues that ANSTO's understanding of standards and best practice is drawn on by the department and, again, is a capability that derives from reactor operations.[52]

5.48 The Australian Academy of Science agrees and notes that Australia, because of its technical and political standing, has an important role as an honest broker. It states:

> We need to be concerned about safety aspects, in the Asia-Pacific region in particular, and to be able to claim expertise and maintain this expertise, noting that countries such as Indonesia are putting a lot of effort into both the research and the nuclear energy aspects of reactor use.[53]

5.49 Mr Boshier from the Australian Institution of Engineers also supports this view. He argues that the reactor has given Australia the presence to influence the development of regional policy on issues such as non-proliferation, reactor safety and waste management. According to Mr Boshier, Australia's credibility as a regional leader in nuclear issues will become more and more difficult to maintain in the absence of a modern research reactor.[54]

5.50 The Committee recognises that Australia cannot ignore developments in the use of nuclear energy in the region. It accepts that it is in Australia's national interest to join with its neighbours to ensure that the region is kept safe from the proliferation of nuclear weapons and from nuclear mishaps.

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51 DFAT, submission no. 27 to the Senate Economics References Committee, p. 4.

52 Mr Bill Paterson, *Committee Hansard*, 27 October 2000, p. 308. Both ANSTO and DFAT argued that Australia's position as a regional leader in nuclear issues is becoming difficult to maintain because of the lack of a modern research reactor before the Parliamentary Standing Committee on Public Works, *Proposed Replacement Nuclear Research Reactor, Lucas Heights, NSW*, 12 August 1999, p. 16.

53 Australian Academy of Science, submission no. 21 to the Senate Economics References Committee. See also submission no. 151, p. 3.

54 Mr John Boshier, *Committee Hansard*, 27 October 2000, p. 276.

5.51 What is clear is that other countries in the region, regardless of Australia's nuclear policy, will develop nuclear power plants. They may even pursue policies of developing nuclear weapons, whilst Australia has firmly rejected pursuing such capabilities.

5.52 In this regard the Committee finds that the connection made between constructing a new research reactor and the ability to influence nuclear disarmament and the implementation of nuclear safeguards measures is tenuous. Assertions are made that there is a strong link, but DFAT did not produce solid proof of its existence.

National interests extend beyond security issues

5.53 The emphasis placed on the national interest tends to dwell on security and safety issues. The Australian Institution of Engineers reminded the Committee, however, that the development of indigenous new technology leading to export-competitive, high-value-added industries, creating high-skilled employment opportunities, is also a matter of national interest.[55] As noted in Chapter 3, the new research reactor has potential to build on the contribution that HIFAR is making to Australian industry especially in export sectors such as mining and in the rapidly expanding areas of information technology and biotechnology.

5.54 In addition, Australia has an established and important role as a source of education and training in the Asia Pacific region. For example, many from the scientific community hold that Australian science is well respected in the region. The CSIRO maintains that 'there is a view around the region that Australian science is powerful, it is well targeted, we do not try to do everything, but the things we do we do well'.[56]

5.55 The argument in this chapter then comes full circle and returns to the main point, that the importance of the reactor is as a research tool for scientists using neutron beams and as an isotope production facility for industry and medicine.[57] Should the government proceed with its plan to build the new research reactor, this facility may certainly have a role promoting Australia's interest but not strictly in national security terms.

5.56 A number of scientific bodies hold that a developed nuclear science and technology base could enhance Australia's standing in the region as a sophisticated

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55 Submission no. 67. See also the Australian Academy of Science, submission no. 151.

56 See Senate Foreign Affairs, Defence and Trade References Committee, *Australia and APEC: A Review of Asia Pacific Economic Cooperation*, July 2000, p. 153; Australian Academy of Science, submission no. 21 to the Senate Economics References Committee.

57 Dr David Walker, Honorary Secretary, Nuclear Engineering Panel, Sydney Division, Institution of Engineers, Australia told the Committee: 'I can say, certainly from my experience, that we are very highly regarded in terms of applications of nuclear technology—not in the design of reactors or anything like that, but in the application of radioisotopes and neutron beams'. *Committee Hansard*, 27 October 2000, p. 279.

and intelligent user of nuclear technology. It would allow Australia to continue to make a contribution to the development of the region. The Federation of Australian Scientific and Technological Societies submitted:

> …a growing national expertise in nuclear technology through HIFAR could generate significant benefits, through enhancing the capacity of our nuclear industry to provide advice, managerial expertise and equipment to our South-East Asian neighbours.[58]

5.57 Professor John White spoke of an intermeshing of regional interests and asked the Committee to:

> Imagine the following vision whereby this device is one of the best, possibly the best, in certain aspects in the world. Indeed, I would not be wishing to subscribe to it if it were not. And it can be, at least from the evidence I have seen, the best in the world for some things, so that people would say, 'We must go to Australia,' and travel from Japan, China or wherever, 'to do what we need to do.' Then what you are doing is bringing together the young people—scientists and technologists—of all of those Asian and related countries into our own sphere and mixing our own with them. That is, strategically, a much more important thing than sitting on the IAEA… [59]

Conclusion

5.58 The Committee found that the justification for the new research reactor solely on national interest grounds is not strong where national interest is defined on purely 'security' and non-proliferation grounds. This is not to discount the valuable work being done in nuclear non-proliferation and safeguards by Australian nuclear experts in the many and varied committees and workgroups endeavouring to find ways to eliminate nuclear weapons.

5.59 The argument for the new research reactor on national interest grounds carries greater weight when the reactor is placed in a broader context which encompasses all areas of nuclear technology, particularly its role in the region as an educational, research and training centre. The Committee believes, however, that this reason alone is not sufficient to justify the new research reactor. If the reactor is to go ahead, then its place as a research tool providing a neutron source for Australian researchers and products for industry, the health care system and the environment should be the main consideration.

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58 Submission no. 177.

59 Professor John White, *Committee Hansard*, 4 December 2000, p. 421. See also Business/Higher Education Round Table Ltd, submission no. 33; Australian Vice-Chancellors' Committee, submission no. 164.

SUMMARY—PART I

In addressing the overall question of whether Australia needs a new research reactor, the Committee finds that on the one side members of the scientific and medical community who gave evidence presented a strong case for the proposed research reactor. On the other hand, those who oppose the new reactor drove home the issue about the lack of serious consideration given to alternatives to the reactor.

The Committee agrees that while the terms of reference may have attracted interest from those directly concerned with the reactor, it may well have failed to encourage scientists and medical practitioners working in other fields to contribute to the inquiry. In effect, the Committee obtained a very full picture of research in areas that rely on nuclear technology but this was in isolation. The Committee did not obtain a full and comprehensive overview of where this particular section fits in the overall picture of Australia's science and medical community. It has not been able to gauge the relative importance of nuclear science and technology research in Australia as measured against other areas of scientific and medical research.

The Committee believes that the question put to the Australian people, and in particular the scientific community, through the public inquiry processes to date has been too narrow in focus. The terms of reference have been directed to the question about whether Australia needs a research reactor. In so doing, the response has tended to concentrate on one particular aspect of scientific endeavour in Australia—nuclear science and technology—without any attempt to place it in the broader national context. There has not been a genuine opportunity for inquiries to weigh up priorities in scientific funding because those coming forward are either supporting or opposing a research reactor. The Committee agrees that the time has arrived to change this narrow focus so that Australians can obtain a much fuller appreciation and understanding about Australia's future research and development. The Committee believes that the debate about the infrastructure needed to meet Australia's scientific needs must be opened up and fully exhausted before any serious decision can be taken on a major facility such as a research reactor.

In essence, the Committee believes that the decision to build a new reactor was taken without a detailed investigation of Australia's present needs and its future direction. The Government did not undertake strategic planning to determine where and how Australia's scientific research and development resources would be most effectively directed prior to entering into the contract for a new reactor. If Australia is to take a strategic and focused approach to research and development, it must take full account of all the options available.

As mentioned in Chapter Two, the Australian Science and Technology Council undertook a review of major national research facilities in 1991 and recommended

that HIFAR be replaced with a high flux research reactor.[60] It recommended that a further process of rigorous evaluation would be necessary before deciding to proceed with the facility. It also suggested that a review of the future development of major national research facilities should be undertaken at four-yearly intervals.

Likewise, the McKinnon Review found that it was not appropriate for a second stage of development to follow immediately on its report. Importantly, it concluded:

> The Review should now be wound up and if, at some later stage, a new reactor is envisaged, it should be assessed by a new panel possibly operating within the *Environmental Protection (Impact of Proposals) Act 1974*.[61]

A broad review to determine Australia's needs and priorities for science and technology and to identify the infrastructure necessary to enhance Australia's scientific and industrial competitiveness would now be timely.

Recommendation

The Committee recommends that before the Government proceeds any further with the proposed reactor, it undertake a thorough and comprehensive public review of funding for medical and scientific research in Australia with a view to assessing priorities including the role, if any, a research reactor would have in contributing to Australia's scientific, medical and industrial interests.

60 See para 2.19.

61 See Chapter 2, paras 2.40–2.42.