**Nuclear Science and Technology in Australia** *by the Australian Science and Technology Council (ASTEC)*
(AGPS, Canberra, 1985) pp.viii + 80, ISBN 0 64404563 9.

In this report ASTEC describes current activities in nuclear science and technology in Australia and advises on future directions for this sector and on the resources and facilities which will be required. Chapter 1 of the report provides a summary and sets out the recommendations. Chapters 2 to 6 review basic research in nuclear science, the broad range of applied research programs in diverse scientific disciplines which rely on nuclear technology, the applications of nuclear technology in industry and medicine, and the organisations which are involved in nuclear science and technology. Chapter 7 presents an overview of earlier chapters, a discussion of issues and the report's recommendations. The aims of this study were:

(i) to review present activities in the field of nuclear science and technology in Australia; and

(ii)to consider and make recommendations on:
- — future options for an Australian participation in nuclear science and technology; and
- — resources and facilities which will be necessary for an optimum future participation in nuclear science and technology by Australia.

The most important tools of the nuclear scientist are the particle accelerator and the nuclear reactor. While a number of Australian institutions operate low energy accelerators, there are no domestic accelerators which operate at intermediate or high energies. Australia has two nuclear reactors situated at the Australian Atomic Energy Commission (AAEC) Research Establishment at Lucas Heights. One of these, HIFAR, is used for research and isotope production and the other, MOATA, is a very small research reactor.

The expenditure of the Commonwealth government on nuclear science and technology is relatively small compared with that of other developed countries, especially in basic research. ASTEC has estimated that Australia's current annual expenditure in basic nuclear research is about $2.5 million, and in applied research using nuclear technology about $31 million. It compares this situation with Canadian expenditure of C$11.5 million and C$250 million respectively. This comparison is somewhat misleading, however, as Canada not only has a domestic nuclear power program, but also designs, builds, and operates its own nulear power reactors for this program. Of necessity, therefore, a greater input than the Australian can be expected at all stages of the nuclear fuel cycle.

The equipment needed for nuclear science and technology is sophisticated, very expensive and is located at centralised facilities. Nuclear facilities are generally shared by various organisations and, in the case of larger facilities, by nations. For example, the new CERN (European Organisation for Nuclear Research) accelerators cost in the vicinity of $500 million. It was ASTEC's function, therefore, to recommend on the fine dividing line between the desire to maintain a domestic competence in nuclear science and technology and the necessity to minimise the expense of investing in modern plant and facilities.

Briefly, ASTEC's recommendations are as follows:

1. A special research centre for high energy physics (possibly at the University of Melbourne and Flinders University) be funded at the rate of approximately $0.5 million per annum for an initial period of 5 years. Research to be undertaken in collaboration with scientists in Europe or the USA.
2. The establishment of a national accelerator facility for basic and applied research. Some of the more important uses of such an accelerator in applied research would be in addressing the problems of soil salinity and erosion and the management of ground water resources using accelerator mass spectrometry, and in the field of materials science for surface modification using ion beam implantation.
3. Proposals to be requested from establishments which have the desire and competence to operate a national accelerator facility.
4. ASTEC believes it is essential to maintain a nuclear reactor in Australia for research and the production of radioisotopes. For this purpose it recommends that the 25 year old HIFAR reactor be upgraded at a cost of about $10 million over a ten year period. Replacement with a comparable reactor would cost about $80 million, an expense which was considered "not feasible in the present Australian economic climate".
5. Given that it is not economically feasible to provide in Australia many of the facilities for basic research in nuclear science and for applied research using nuclear technology, ASTEC recommends the provision of funds for Australian scientists who need to travel overseas to use nuclear facilities which are not available in Australia but which are necessary to support 'excellent' research projects. An amount of $250,000 per annum is considered appropriate, to be distributed through the Australian Research Grants Scheme (ARGS).
6. Additional funds should be made available through the ARGS to meet any charges that may be levied by overseas neutron beam and accelerator facilities.

Although the AAEC Research Laboratories at Lucas Heights constitute the largest centre of nuclear science and technology in Australia, ASTEC makes no specific recommendations regarding the structure and function of the AAEC. It did, however, state its support for a proposal from the Minister for Resources and Energy that part of the *Atomic Energy Act 1953* be repealed and replaced by legislation establishing an Australian Nuclear Science and Technology Organisation in place of the AAEC. This new body would be directed towards the needs of Australian industry and the further development of the various peaceful applications of nuclear science and technology.

ASTEC is concerned that the Australian public is, in general, poorly informed about the realised and potential uses of nuclear technology in science, medicine and industry, since the more controversial aspects of nuclear technology, namely nuclear weaponry, uranium mining, and nuclear power, hold centre stage in public debate on this topic. While ASTEC lists the many advantages associated with Australia maintaining involvement in nuclear science and technology, it was indeed unfortunate that its report was released

so close to the Chernobyl accident. Perhaps, rather than being poorly informed, we have a nation of sceptics!

**A.D. Owen**
University of New South Wales

**Information Technology Study — Community Perceptions** *by the Western Australian Science, Industry and Technology Council*
(Perth, June 1986) pp. 55 + 68 on microfiche, $10.00, ISBN 0-7309-0206-4.

Any publication that begins with a glossary of terms and concludes with a two-page list of acronyms is unlikely to excite a very large audience, regardless of the subject matter. Unless, of course, that audience happens to be fascinated by the development and implementation of information technology policy in Western Australia.

This booklet, published by the Western Australian Science Industry and Technology Council with assistance from various other government departments, contains the findings of a study designed to assess particular problems, capabilities and prospects for Western Australia in terms of its development as an information society. The findings are to act as a basis for future policy development in the area of information technology. The study was based on a series of interviews with experts, on structured interviews with members of the community and on the results of a questionnaire.

The Executive Summary at the beginning of the booklet provides the cursory scanner with a summary of the major findings of the study under the following headings:-

—Information
—The Information Industry
—Telecommunications
—Government and the Information Industry
—Legal Considerations
—Education
—Social Effects
—Conclusions

This section, together with the page of conclusions towards the end of the publication, almost make the rest of the publication a waste of the state's precious forestry resources as most of the information contained therein is available from various other sources.

What the reader may find confusing is the statement in the conclusion of the Executive Summary that the study showed Western Australia to be an information society. Such a conclusion seems to conflict with the premise stated earlier in the publication that the study was commissioned in the belief that Western Australia was an information society. Could it be a case of a study being commissioned to find what bureaucracy wants it to find?

Semantics aside, the publication does contain much useful information for a Western Australian organisation whose livelihood depends on current and future government policy in the area of information technology (or one