



Australian Radiation Protection and Nuclear Safety Agency

**ISSUE OF A LICENCE TO THE
AUSTRALIAN NUCLEAR SCIENCE AND TECHNOLOGY ORGANISATION
TO PREPARE A SITE FOR
A REPLACEMENT RESEARCH REACTOR FACILITY**

STATEMENT BY THE CEO OF ARPANSA

The Executive Director of ANSTO submitted an application on behalf of ANSTO for a facility licence to prepare the site for the Replacement Research Reactor Facility (the application) on 13 April 1999.

In so doing, the Executive Director supplied information as required by the ARPANSA legislation and licence application pack. The application referred to and relied on extant documents, most notably, those prepared in accordance with the environmental impact assessment process which had been required for the proposal under the *Environment Protection (Impact of Proposals) Act 1974*.

On 22 September 1999, I issued the attached facility licence (Attachment A) pursuant to my powers under sub-section 32(1) of the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act). The licence authorises ANSTO to prepare a site in accordance with the application at the Lucas Heights Science and Technology Centre for the Replacement Research Reactor Facility proposed in the application.

Scope of the Licence

Sub-section 30 (1) (a) of the Act states that a ‘controlled person’ must not ‘prepare a site for a controlled facility’ unless the person is authorised to do so by a facility licence issued by me in accordance with my powers under sub-section 32(1) of the Act.

In exercising these powers, I understood the term ‘*prepare a site*’ to mean the range of activities needed to bring the site into such a state that construction of the relevant proposed controlled facility might commence. These activities would include the necessary clearing and grading of the site and preparation of access roads, fencing and construction support buildings; but not any digging of foundations or other activities that would pre-empt matters to be considered in an application to construct the facility. I do not regard the preparations done by ANSTO to date for the environmental impact assessment and Parliamentary processes or the calling of tenders as falling within the meaning of preparing a site for a controlled facility.

I would, however, regard the evaluation of tenders as a part of preparing the site for the controlled facility and as falling within the terms of the licence. Licensing a controlled person to ‘prepare a site for a controlled facility’ implies a limitation or restriction on the planning of the controlled facility itself. Thus, the licence I have issued authorises ANSTO to prepare a site for a reactor within the parameters described in the application and consistent with any conditions specified in the licence. I have also incorporated some advisory notes into the licence that foreshadow issues that will need to be taken up in later consideration of any application to construct the facility.

Matters Taken into Account

Sub-section 32(3) of the Act requires that, in exercising my discretion as to whether to issue a licence under sub-section 32(1), I must ‘take into account the matters (if any) specified in the regulations, and must also take into account international best practice in relation to radiation protection and nuclear safety.’

At Attachment B is a ‘Safety Evaluation Report’ on the proposal prepared by the staff of ARPANSA (the SER). I discussed the matters I required to be addressed in the SER with the relevant staff and considered and perused drafts of the document and the recommendations contained therein. Accordingly, it was the SER that formed the prime basis for my decision. My decision-making process, although centred on the SER, also included the supporting documents to the SER and the application, together with its supporting documentation. As part of the process, I read and considered the application and all the supporting documents to the application and the SER detailed above.

Specifically with regard to submissions from the public, I considered the responses to those submissions in the SER and I also read and considered each of the public submissions.

The primary matters that I have considered that I must take into account in reaching my decision, and which I have taken into account, together with the relevant decision that I have made on each of these matters are detailed below. However, I must say that this is not an exhaustive list of the matters that I have taken into account, rather it is a breakdown of matters that I have considered essential to be taken into account by me under the Act and regulations.

(a) Whether the application was in the form approved by me under regulation 39(1)

Yes, the application was in a form approved by me.

(b) Whether the application includes all the information asked for by me under section 32 of the Act (regulation 41(3)(a)).

It does so – as described in the SER.

(c) Whether the information establishes that the proposed conduct can be carried out without undue risk to the health and safety of people, and to the environment (regulation 41(3)(b))

In a literal sense, the ‘proposed conduct’ of preparing the site does not raise radiation health issues. However, I interpret the provision as meaning that, in deciding whether to issue a licence to prepare the site for the facility, I need to take into account whether the information presently available shows that the facility could be constructed, operated and decommissioned safely at the site chosen.

This matter is addressed in detail in the SER – both in terms of normal operation of the Replacement Research Reactor and the possible bounding accident – called the Reference Accident. I am satisfied that the SER considers the material I required to be considered. After considering that material, I concluded that:

- the normal operation of the Replacement Research Reactor as proposed and as operated in accordance with contemporary safety culture would not expose workers or the public to significant doses of radiation;
- the defence in depth features of the proposed reactor and site, including the pool, the containment and the buffer zone, mean that even a severe accident is not likely to cause a

radiological impact on the population such as to make siting the reactor at the LHSTC unacceptable.

A significant point to emerge in the discussion of the Reference Accident is the exclusion of a 'fast loss of coolant' accident as being plausible. This is an important point in determining the design of the Replacement Research Reactor and as a result I have included an advisory note indicating that I will require that the assumptions on which the exclusion is based be validated in the design.

ANSTO's Environmental Impact Statements were included in the application by reference, and are addressed at section 6 of the SER. Following their review, Environment Australia concluded that "hazards and risks associated with the replacement reactor have been examined and do not pose a constraint to siting". I concur with this conclusion.

There is some further work that needs to be done to complete the characterisation of the site in relation to local flooding, groundwater and seismic conditions. I have imposed licence conditions requiring that this work be carried out and made available to me.

(d) Whether the applicant has shown that there is a net benefit from carrying out the conduct relating to the controlled facility (regulation 41(3)(c)).

This sub-section needs to be read and considered in the context of the Act, where the role of the CEO is to determine whether to issue a licence permitting a proposed conduct in relation to a controlled facility. The Act does not place upon the CEO of ARPANSA the role of assessing the cost-benefit of a range of possible conducts or activities at a range of proposed sites. Nor does it imply or require an assessment of the net benefits that might have emerged from examination of alternative sites or alternative means of achieving the same ends. I see the sub-section as requiring me to undertake an assessment and reach a conclusion that the particular conduct proposed is 'justified' in a radiological sense. That is, that the good that will be achieved by the proposal - notably the continued production of medical and industrial radioisotopes and the expanded opportunities for scientific research using neutron beams - exceeds the detriment that may arise from the exposures of people to radiation likely to flow from a properly managed project for construction and operation of the reactor.

Given the conclusions I reached above in relation to the impact of the reactor on the health and safety of people, I did not find it difficult to conclude that this requirement was satisfied.

(e) Whether the applicant has shown that the magnitude of the individual doses, the number of people exposed, and the likelihood that exposure will happen, are as low as reasonably achievable, having regard to economic and social factors (regulation 41(3)(d)).

Again, I interpret this sub-section as requiring judgment by me of the proposed facility during its operation and decommissioning, as far as these can be anticipated; not simply evaluation of the impact of site preparation activities.

These issues are dealt with in the SER under discussion of the Radiation Protection Plan in section 3.3. Clearly, much of the detailed planning of safety management regimes can only

be done when the Replacement Research Reactor design comes closer to completion; but, accepting this, I agree with the scope and conclusions of the SER that the plans as offered satisfy the requirements of this sub-section.

There is further work that needs to be done to confirm and make more precise the estimates of the impact of the operations of the Replacement Research Reactor Facility. I have imposed licence conditions to ensure that this work is carried out and made available to me.

(f) Whether the applicant has shown a capacity for complying with these regulations and the licence conditions that would be imposed under section 35 of the Act (regulation 41(3)(e)).

The SER refers to this matter under discussion of the Project Management and Safety Management Plans at section 3.1 and 3.2 respectively. I am satisfied that ANSTO does have a long track record of operating the HIFAR reactor safely and is a sophisticated organisation, familiar with contemporary nuclear safety culture. In my opinion, there can be little doubt that it possesses the necessary capacity to satisfy this provision.

Some of the submissions I have considered cast doubt on ANSTO's capacity in the light of reports of recent incidents at the LHSTC involving mishandling of spent fuel and discharges from the radioisotope production facilities. In my opinion, this is not a sustainable conclusion. Paradoxically, an organisation with a strong safety culture will discover more 'incidents', than one with a poor regard for safety practices. The important thing is that events are examined and the lessons learnt. Building a safety culture is a matter of continuous improvement and I believe that ANSTO has demonstrated by its past conduct and the matters contained and addressed in the application that it is committed to this task.

(g) Whether the application has been signed by an office holder of the applicant, or a person authorised by an office holder of the applicant (regulation 41(3)(f)).

I am satisfied that this requirement was met. The application was signed by Professor Helen M Garnett, who is the Executive Director, ANSTO and Mr Garry Seaborne Project Manager, Replacement Research Reactor Project, ANSTO (the Nominee).

(h) The content of any submissions made by members of the public about the application (regulation 41(3)(g)).

In accordance with regulation 40(3), receipt of the application was advertised in a national newspaper on 29 April 1999 and in the Commonwealth Gazette of 28 April 1999. In addition, a notice was published in two papers circulating in the area surrounding the LHSTC and on the ARPANSA site on the world wide web. The notice invited people and bodies to make submissions about the application. It called for submissions by 28 May (this date was subsequently extended on request to 11 June 1999) and described procedures for making submissions. I am satisfied that the provisions of the sub-regulation were met.

The SER contains a full description and assessment of the submissions made by the public. I agree with this description and assessment. As noted above, I read and considered all the

public submissions received by ARPANSA and some personal observations are set out later in this document.

International best practice

The SER states that the guidance documents used by ARPANSA in assessing the application are drawn from documents and recommendations of the International Atomic Energy Agency and the experience of nuclear regulators around the world. This is discussed under the Process of Review at section 1.3 of the SER. I agree with the conclusions of the SER that this is the proper interpretation of international best practice in this context and believe that it has thus been appropriately taken into account in the SER, the conclusions of which I support.

Public Submissions

A significant number of the public submissions argued that a replacement reactor was not necessary and/or that the necessity had not been established to date; and that, in any case, Lucas Heights was not an appropriate site given the surrounding population and an alternative remote site should be found.

I considered these submissions. However, the Act requires me to determine the licence application before me for a specific conduct, ie at the site specified in the application. I have the full power to determine whether to grant the licence sought against the matters required to be considered in the Act and the regulations. I do not have the power, or the ability, to assess alternative proposals.

Similarly, a number of submissions criticised the indemnity arrangements and the lack of commercial insurance cover. I did not see these issues as being ones which I am permitted or required to take into account under the Act and regulations or otherwise.

The SER goes into some detail about how the public submissions were taken into account in its conclusions and recommendations. The major areas for public submission that I considered relevant to my decision, as I summarise them, are as follows.

- **the proposal for the Replacement Research Reactor will generate further waste; that there is not a safe storage and disposal system established in Australia to handle this waste (some argue that there will never be such a system) and the licence should not be granted until this matter is resolved.**

The management of spent fuel and waste from reactor operations is a serious consideration that Australia must grapple with, irrespective of whether the Replacement Research Reactor proceeds. The disposal of waste is a matter of high importance, though it is not urgently upon us at this time. The ANSTO application and the EIS point to the plans presently established by the Government. These include a national strategy for the long-term management of Australia's radioactive wastes, including the historical and future wastes generated by ANSTO, and a strategy for dealing with spent nuclear fuel. These are discussed under the Radioactive Waste Management Plan at section 3.4 of the SER.

It is true that the waste repository proposal is still in the development stage, that the long-lived intermediate level waste storage facility is yet to be definitely planned and no decisions

have been taken on final disposal of long-lived intermediate level waste. There are significant environmental, social and political issues that will need to be dealt with for these plans to come to fruition. The question for me in this application is whether, at least in principle, I could see that there was sufficient commitment to the current plan and the general availability of alternative approaches so as to be confident that a way through would be found in a reasonable timescale.

I took into account that there is clear progress on the siting of a low level waste repository and a Government commitment to examine co-locating a store for long-lived intermediate level waste in association with the repository. I have read relevant provisions of the contract that exists between ANSTO and COGEMA for the reprocessing of HIFAR spent fuel rods, noting that this contract is able to be extended to cover the Replacement Research Reactor, with final details to be settled once the fuel design for the reactor is known. I understand that the tender specifications require the tenderers to come forward with proposals for dealing with spent fuel in accordance with Government policy. The Government, in the conditions imposed by the Minister for the Environment and Heritage, has accepted the need to address disposal of the long-lived intermediate level radioactive wastes. I thus formed the view that a framework existed to tackle the waste issues. I believe that alternatives could be developed if elements of this framework were not to materialise for some unforeseen reason.

- **the licensing of the replacement reactor should not proceed until licences are issued for existing activities at the LHSTC**

I do not understand this argument. If the argument is that there is a risk that I will not be able to licence existing facilities that are important to the effectiveness of the replacement reactor proposal, then that risk is borne by ANSTO and is presumably accepted by it.

- **the proposal is unsafe because:**
 - **it will expose people to additional radiation, which is inherently unsafe;**
 - **the chosen ‘reference accident’ does not bound the plausible accidents and that far worse consequences could flow from other postulated accidents.**

The basis for radiation protection is the assumption that any level of radiation exposure carries some risk, however small, of health effects. The scientific evidence for this assumption is fiercely debated, but it is the basis for international best practice in radiation protection and is applied by ARPANSA. Should a population be exposed to any heightened risk at all, even for the benefit of the whole of society? I believe that society has accepted this proposition by accepting the siting of many potentially hazardous industries in populated areas. The hazard posed by the replacement research reactor at the LHSTC is below that presented by several other industries.

I accept that the critical point in the evaluation of the reference accident is the exclusion of a fast loss of coolant (see remarks above and advisory note 6.5). But I believe that the ARPANSA review and the international peer reviews commissioned in the EIS process demonstrate that it is a valid scenario. Of course, it is possible to posit all sorts of simultaneous disasters and suggest superhuman powers to saboteurs or enemies; but that does not help the careful evaluation of a real-life proposal.

- **studies of the health of the local population should be carried out.**

The SER refers to studies that have been carried out. I see no indication in those studies that would suggest any need for further study as a pre-requisite to allowing the reactor project to proceed to this stage; nor would the history of population exposures from the operation of HIFAR lead me to believe that there would be health affects at a level which could be detected by any plausible study. I thus see no need to suggest that a health study be made a pre-condition for the Replacement Research Reactor. Of course, ARPANSA would not oppose a study if it were to proceed and would co-operate in any way sought.

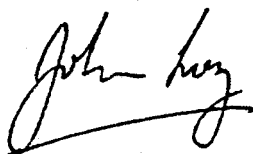
- **the design of the reactor is undetermined and does not allow decisions to be made sensibly about safety.**

Clearly, the evaluations leading to this licensing decision are carried out against a generic description of the reactor in the application. I have judged that to be sufficient to support a decision to issue a facility licence authorising ANSTO to prepare a site for the controlled facility proposed in the application. I expect that after evaluation of tenders, ANSTO will seek a licence to construct the Replacement Research Reactor and at that time I will evaluate that application against information flowing from a detailed design.

Observation on the Process

The formal licensing process is new to both ARPANSA and ANSTO and both organisations are learning how it should best be managed. One issue that I intend to clarify with ANSTO is the status of documents on which a licence application partly relies and which I take account of in my decision. In the present instance, most of the significant documents are clearly referenced and there can be no ambiguity or confusion. There were, however, a small number of documents referred to in the application which were not formally appended to it. The SER makes clear reference to the version of the documents in ARPANSA's possession which were used in the assessment process.

While I am confident that this matter did not affect the current process, I will discuss with ANSTO how future applications can unambiguously establish what documents are being relied upon without at the same time making licence applications unwieldy bundles of detailed technical papers. This matter is taken up in advisory note 6.1.



John Loy
CEO of ARPANSA
22 September 1999