ANSWERS TO QUESTIONS OF CONTRACTING PARTIES

ON

AUSTRALIA'S NATIONAL REPORT

TO THE

CONVENTION ON NUCLEAR SAFETY

SECOND REVIEW MEETING

GROUP 3

Australian Answers to Questions on the Australian National Report

No.	Country	CNS Ref.	Comments / Questions	Response
1	Peru 1		**As general comment, even Australia does not have power plants, the report reflects that commitments of Convention on Nuclear Safety are fulfilled.**	The comment is noted with thanks.
2	Sweden 1	7	It is mentioned in section 7.2 that ANSTO is not generally subject to the health and safety legislation of New South Wales. **Is there any risk for confusion whether the Commonwealth or State regulations apply on any health and safety issue of a nuclear facility?**	There is no confusion. ANSTO must comply with Commonwealth (Federal) legislation. The Act of Parliament establishing ANSTO explicitly exempts ANSTO from having to comply with State (Provincial) law. Nevertheless, there is a large amount of uniformity between Commonwealth and State implementation of their respective legislation, in terms of radiation protection outcomes by using common codes of practice and standards eg IAEA transport regulations, the Basic Safety Standard etc. One area that NSW state legislation applies is in ANSTO's off-site emergency arrangements, which rely on State combat agencies for implementation. ANSTO also complies with state legislation relating to health and safety in areas such as the use of hazardous, but non-radioactive, substances.

Australian Answers to Questions on the Australian National Report

3	**Sweden 2**	**7**	It is mentioned in section 7.6 that the Regulatory Assessment Principles of ARPANSA are the most important documents used in regulatory assessments. **What is the legal status of these Assessment Principles?**	**The *ARPANS Act 1998*** requires the CEO of ARPANSA, in deciding whether to issue a licence, to take into account the matters in the regulations and 'international best practice'. The matters in **the *ARPANS Regulations 1999*** are: – Whether there is any 'undue risk' is to the health and safety of people and the environment from harmful effects of radiation; – Net benefit, ALARA. The regulations also set 'practices to be followed'. These include: – Dose limits (from ICRP 60 and BSS), and to set constraints – ALARA; – Codes of practice, eg transport regulations. The regulations also set standard licence conditions: – Prevent, control and minimise accidents and consequences – Records and reporting, including routine, breaches, accidents – Access by ARPANSA inspectors. The ARPANS Act and Regulations are based heavily on IAEA philosophy and guidance, particularly on regulatory practice and the BSS, and on contemporary regulatory practice in other countries. The **Regulatory Assessment Principles** are not part of the regulations. They are the next tier of documentation below the Regulations in the form of guidelines intended for use by regulatory staff (ARPANSA) in assessing the safety of nuclear installations, which are subject of licences or applications, against the requirements of the Act and Regulations outlined above. They draw from international publications and experience. Much of the structure of the document owes its structure, philosophy and emphasis to INSAG, particularly defence in depth and safety culture.
4	**Sweden 3**	**7**	It is mentioned in section 7.7, that the first tier regulatory documents are Acts and Regulations. **Please explain the scope of the safety regulations applicable on the HIFAR? Are these regulations also drawn from the IAEA Safety Standards?**	
5	**Czech Republic 1**	**8**	**Despite of the moratorium established to construct NPPs in Australia, quite a progress was made between both the review conferences to achieve consistent regulatory regime (passing the new Law, creation of ARPANSA, etc.) that we do appreciate. In our view the example of Australia could be used as model for other countries that own nuclear facilities, and refuse nuclear power- such as Austria.**	We agree with the comment, subject to the particular circumstances in each country.
6	**Czech Republic 2**	**8**	**Could you briefly explain the role of ARPANSA, or its predecessor NSB in the tender process for a new RRR reactor?**	ARPANSA did not have a formal role in the tender process, but was consulted by ANSTO and by all tenderers on its safety and regulatory requirements. It is a condition of contract that these requirements be met.

Australian Answers to Questions on the Australian National Report

7	**Peru** **2**	**8**	In the article 8, in the CEO of ARPANSA functions are included those for providing advice and services on radiation protection. **To whom is this radiation protection services are provided?** **Are these functions related to promotion tasks or for regulatory activities?**	Services are provided on a cost recovery basis to those who wish to purchase them. The functions are not promotional and are related to filling a need and to regulation. Traditionally ARPANSA and its predecessor organisations provided radiation protection services in areas of need and where there we were few, if any, providers. For example, ARPANSA: – maintains the primary Australian standard for absorbed dose and calibrates survey instruments; – developed and maintains the only nation-wide personal radiation monitoring service; – is developing and installing regional CTBT monitoring stations.
8	**Lithuania** **2**	**8, 15**	**Is the ARPANSA's function to carry out the radiation monitoring of the environment?** **How this field of work is organized in Australia?**	ARPANSA's scientific branches specialise in environmental radiation measurement. For example, measurement of plutonium at Maralinga atomic weapons test site, the CTBT work, for responses to radiation emergencies and environmental monitoring around ANSTO's nuclear facilities. Any organisation may provide environmental monitoring services in Australia. For example, ANSTO undertakes radiation monitoring in particular areas, as a commercial service.
9	**Sweden** **4**	**11**	**How is the situation in Australia regarding the demand and supply of nuclear specialists in view of the planned Replacement Research Reactor?** **What academic training options exist?**	ANSTO and ARPANSA are the only organisations in Australia (other than University Physics departments) employing nuclear specialists. In common with nuclear organisations around the world, ANSTO has experienced a major loss of experienced staff through retirement. For some years now it has been actively recruiting younger replacements. While tertiary level training in radiation protection is available in Australia, there are currently no courses in nuclear engineering. The HIFAR training program is addressed in the National Report Article 12 page 21. There has been some success in attracting nuclear engineers from overseas. Other recruits get on the job training, and there has been a limited amount of placement of people in overseas organisations to gain experience. The replacement reactor project itself is providing wide opportunities for staff to gain experience, through participation in ANSTO's own project review work and in the contractor's project teams.

Australian Answers to Questions on the Australian National Report

9	**Sweden 4**	**11**		The contract provides for both a technology transfer program and training of operational staff. The particular issue of adequate staffing during the period of parallel operation of HIFAR and the RRR (planned to be about six months) is receiving close management attention. ARPANSA has had the difficult task of rapidly building staff numbers to handle its licensing mandate for existing facilities as well as the regulatory review and licensing of the replacement reactor. It is not possible for a regulator in a small nuclear industry to maintain the full scope of expertise necessary to licence a reactor. In order to overcome that difficulty, ARPANSA has called on international experts to assist in their consideration of ANSTO's application. For example, ARPANSA supplemented its expertise with consultants in probabilistic seismic hazard assessment, seismic design of structures, heat transfer and transient analyses arranged through the IAEA and Canadian Nuclear Safety Commission.
10	**Czech Republic 3**	**14**	There is a PSA study available for the HIFAR reactor, similar to our research reactor LVR-15. **Can you provide some basic information on the results of PSA study and the major risk contributions?**	The two primary damage scenarios assessed in the HIFAR PSA were overheating of irradiated fuel (in the core and the No. 1 storage block) and overheating in association with degraded or ineffective containment. The mean frequency of sequences contributing to the first scenario was 2.6 events in 10,000 years, with reactor coolant leaks contributing 42%, earthquakes 31% and coolant pump trips 13%. A design deficiency identified in the Emergency Core Cooling System contributed significantly to the frequency of scenarios involving coolant leaks, and has since been corrected. The overheating of fuel with degraded containment had a mean frequency of one event in 10,000 years, dominated by a 78% earthquake contribution, but this was based on uncertainties in seismic data and structural response that have now been resolved. Secondary scenarios assessed involved mechanical damage to irradiated fuel and tritium releases. Further information and a brief summary report can be provided. The Planned Activities to Improve Safety in the National Report indicates that the PSA (Article 14) now requires updating to take account of follow-up actions and new seismic data.

Australian Answers to Questions on the Australian National Report

11	**Lithuania 1**	**15**	**What are the main problems connected with the safe operation of the HIFAR nuclear research reactor and decommissioning of the Moata training reactor from the radiation protection point of view?**	HIFAR – There are no particular problems with the safe operation of HIFAR from the radiation protection point of view. The ALARA objective for workers is 2 mSv per year. Average radiation doses are around that figure. Radiation doses to the reactor Shift Supervisors, at about 4 to 5 mSv per year, tend to be highest of any group of operators. This can be attributed to the level of shielding of the reactor block and the fact that the control room is located within tne containment building. Additionally, since the reactor is heavy water cooled and moderated, tritium contributes to doses to maintenance personnel, particularly during extended shutdowns for inspection and maintenance. Argon-41, due to activation of naturally occuring argon in cooling air of irradiation rigs, contributes the largest portion of the 10 μSv annual doses to the critical public group. Formal meetings of a dose reduction working party are held on a regular basis to consider radiation protection issues in the context of the application of the ALARA principle. MOATA – Based on the experience available from other Argonaut reactors, no specific radiation protection problems are foreseen in decommissioning MOATA.
12	**Japan 1**	**15**	It is reported that the directive sets objective values for doses below which an assessment of ALARA is not required. **Is application of the ALARA principle to radiation protection voluntary efforts by licensees, is it recommended by the regulatory body, or is it required by the regulatory body?**	ANSTO previously applied the ALARA principle on its own initiative and in response to recommendations of ARPANSA's predecessor body, the Nuclear Safety Bureau. (See dose reduction working party, previous question). Under the new system of licensing, the application of ALARA is now also a legislative requirement.

Australian Answers to Questions on the Australian National Report

13	**Lithuania 3**	**15**	**What is the scope of ANSTO'S Safety Directive and Commonwealth Environment Protection and Biodiversity Conservation Act 1999?**	ANSTO's Safety Directives are not statutory rules. The Directives are internal policy documents setting out the ANSTO-wide framework for safety plans and arrangements and must be complied with by all staff. The Directives give practical effect to the legislative and regulatory requirements for safety. The *Environment Protection and Biodiversity Conservation Act 1999* prohibits activities that will have a significant negative impact on the environment unless approved or exempted by the Minister for Environment. Activities include all nuclear activities which might have a significant effect upon the environment. To gain approval, an applicant must submit a detailed environmental impact assessment at the conceptual stage of the project. The assessment process includes public consultation about the application. The Act applies to all actions that might be undertaken by ANSTO.
14	**Sweden 5**	**16**	**Please explain the role of ARPANSA in a nuclear emergency.**	ARPANSA's roles in an emergency involving the HIFAR reactor are as follows: – Provide advice to the Commonwealth Government and the public; – Provide radiation monitoring teams under the Commonwealth's disaster management plans for the intermediate emergency response; – Monitor the accident management within the HIFAR facility and monitor emergency response to protect people and the environment.
15	**Czech Republic 4**	**19**	The report states, that a similar research reactor of DIDO series is operated in Germany. **Does ANSTO as the HIFAR operator keep contacts with the operator of FRJ-2 reactor in order to exchange information on operational experience, completed reconstructions, or possible lifetime extensions?**	The operators of the DIDO class reactors (DIDO and PLUTO, UK; HIFAR, Australia; FRJ-2, Germany; and DR-3 Denmark) have maintained close contact throughout the life of their plants. They have met as a group on a regular basis since the 1960s to exchange information on all aspects of plant operation, safety assessment, upgrading, refurbishment and life extension. The next meeting is planned in Australia in May 2003. In the case of the UK and Denmark, participation in the group has (to-date) continued beyond the closure of their reactors and a future information exchange on decommissioning is likely.
16	**Sweden 7**	**19**	**Please explain whether there is any experience feed-back exchange between ANSTO and foreign operators of similar research reactors.**	See previous answer 15 to Czech Republic.

Australian Answers to Questions on the Australian National Report

17	**Sweden 6**	**19**	**Please explain the plans and arrangements mentioned in section 19.9.** **Is the SAR included in the 12 month updating requirement?**	Schedule 3, Part 1 of the ARPANSA Regulations require a licence holder to have in place the following approved plans and arrangements: – Effective control – Safety Management – Radiation protection – Radioactive waste management – Security – Emergency – Decommissioning. Guidance as to the content of the above plans is provided in an ARPANSA Expectations document available at www.arpansa.gov.au. The updating of the SAR is an ongoing activity, addressing the issues identified in the National Report under Planned Activities to Improve Safety (Article 14, page 49). It will also address changes arising from any safety-related modifications to the plant. Progress on these matters will be reported in the context of the 12 monthly review and update of management plans and arrangements.
18	**Sweden 8**	**19**	**What is the time schedule for updating the procedures for handling of radioactive waste at HIFAR?** **Is there any programme in place to reduce the amount of radioactive waste generated?**	A new ANSTO site-wide directive for safe handling of radioactive wastes has been issued and implemented. A schedule of activities to update the procedures for handling of radioactive waste at HIFAR has been provided to and agreed by ARPANSA. The work extends over several years. These activities are also relevant to preparation for obtaining accreditation to ISO 14001 on environmental management, which will provide a framework within which further waste reduction can be achieved. ANSTO has developed and implemented a Waste Management Action Plan, which included specific tasks looking at ways to minimise the amount of radioactive waste generated.

Australian Answers to Questions on the Australian National Report

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<td rowspan="5">Peru
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<td rowspan="5">19</td>
<td rowspan="5">In relation to article 19. viii) about routine discharges it should be desirable to know the concentration levels of most representative radionuclides.</td>
<td>It has not been deemed necessary to set specific values for concentration levels of various radioactive nuclides in the water discharged specifically from HIFAR, because all liquid streams from HIFAR are collected in delay tanks, monitored for radioactivity, combined with other site effluents when activity has decayed, and after any necessary further treatment discharged to the offsite sewer. Thus, this discharge to sewer includes inputs from HIFAR, Isotope Production and various laboratories. ANSTO has concluded a “Trade Waste” agreement with Sydney Water (the organisation responsible for the operation of the sewer system). That agreement requires that, by the time discharges from the ANSTO site reach the Sewage Treatment Plant, the levels of radioactivity in those discharges comply with the World Health Organisation’s derived concentration limits for drinking water.

Typical discharge concentrations are as follows:
<table>
<tr><td></td><td>Alpha emitters
Bq/m^3</td><td>Beta emitters
Bq/m^3</td><td>Tritium
Bq/m^3</td></tr>
<tr><td>Trade Waste Limit</td><td>1.25x10^4</td><td>1.25x10^5</td><td>1.95x10^8</td></tr>
<tr><td>Typical discharge analysis</td><td>1.0x10^3</td><td>1.0x10^4</td><td>5.0x10^6</td></tr>
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<tr><td>Information on the quantities of Argon-41, Iodine-131 and Tritium in the gaseous discharges from the HIFAR stack are provided in the National Report, paragraph 19.44 (page 46).

Work on the characterisation of radioactive discharges is currently being undertaken as part of the development of ANSTO’s environmental management system, which will be accredited to ISO 14000 by 2004.</td></tr>
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