Australian Government
Australian Radiation Protection and Nuclear Safety Agency

F0157

Facility Licence

Under Section 32 of the *Australian Radiation Protection and Nuclear Safety Act 1998*, (the Act) I, Carl-Magnus Larsson, CEO of ARPANSA issue a Facility Licence to:

Australian Nuclear Science and Technology Organisation (ANSTO)

that authorises the persons identified below to operate the Nuclear Installation known as the **OPAL Reactor** described in Schedule 1A and associated sources described in Schedule 1B, subject to the following:

1. Conditions in Section 35 of the Act
2. Conditions in Part 4 Division 4 of the Australian Radiation Protection and Nuclear Safety Regulations 1999 (the Regulations)
3. Practices to be followed in Part 5 of the Regulations
4. Conditions in Schedule 2

Persons covered by this Licence are the Licence Holder, employees of the Licence Holder, Commonwealth Contractors and employees of Commonwealth Contractors.

ISSUED at Sydney, this day of 2014

Carl-Magnus Larsson
CEO of ARPANSA

This licence continues in force until cancelled or surrendered

Schedule 1A
Nuclear Installation

Item[1]	Kind[1]	Facility Details
9	Operating a controlled facility, being a nuclear reactor: (a) for research or production of nuclear materials for industrial or medical use (including critical and subcritical assemblies); and (b) with maximum thermal power of 1 megawatt or more	Open Pool Australian Lightwater (OPAL) 20 MW Research Reactor Location: Building 80, Lucas Heights Science and Technology Centre

Schedule 1B
Controlled Apparatus and Controlled Material[2] (Sources) used in connection with the facility

Group[3]	Item[3]	Kind of controlled apparatus and controlled material
Group 1	1	Sealed source for calibration purposes of activity of 40 MBq or less
	22	Optical source, other than a laser product, emitting ultraviolet radiation, infrared or visible light
Group 2	25	Sealed source for calibration purposes of activity of more than 40 MBq
Group 3	41(1)	Sealed source not mentioned in another item of Schedule 3C: Reactor start-up source Am-241/Be 33 GBq

1 Item number and kind of controlled facility as set out in Schedule 3A of the Regulations.
2 Source details are specified in the licence holder's source inventory workbook or the safety analysis report for the facility.
3 Group and Item of controlled apparatus or controlled material as set out in Part 1 of Schedule 3C of the Regulations

Schedule 2
Licence Conditions

Source & Nuclear Material Inventory

1. The licence holder must maintain an up to date inventory of all controlled apparatus and controlled material, including nuclear material, held in the facility in a form acceptable to the CEO of ARPANSA.

Compliance Reporting

2. The licence holder must provide to the CEO of ARPANSA within 28 days of the end of each quarter, or other period as agreed by the CEO of ARPANSA, and in a form acceptable to the CEO, information about compliance for the previous quarter year.

Training

3. The licence holder must ensure that any person who operates the facility and/or deals with associated sources has received appropriate training in radiation and nuclear safety and training with respect to use or operation of the facility and/or sources authorised by this licence.

4. The licence holder must ensure that any person who repairs or maintains the facility and associated sources has appropriate qualifications and training with respect to the type of facility and sources authorised by this licence.

Work Practices

5. The licence holder must ensure that appropriate work procedures, records and practices in relation to the facility and associated sources are documented, maintained, approved by the licence holder's safety committee or radiation safety officer, and followed.

Standards and Codes of Practice

Licence Condition 6 applies to associated sources as indicated in Schedule 1B.

6. The licence holder must ensure compliance with relevant sections of the following standards and codes of practice as they pertain to sources used in connection with the facility authorised by this licence:

Relevant Standards and Codes of Practice	Item from Schedule 1B to which condition applies
(a) Radiation Protection Series No. 1 *Recommendations for Limiting Exposure to Ionizing Radiation (1995) and National Standard for Limiting Occupational Exposure to Ionizing Radiation (republished 2002)*	1, 25, 41(1)
(b) Australian Standard *Safety in Laboratories - Ionizing Radiations (1998)* (AS 2243.4-1998)	

(c) Radiation Protection Series No. 11 *Code of Practice for the Security of Radioactive Sources (2007)*	41(1)
(d) Radiation Protection Series No. 12 *Radiation Protection Standard for Occupational Exposure to Ultraviolet Radiation (2006)*	22
(e) Australian/New Zealand Standard *Safety in laboratories - Non-ionizing radiations-Electromagnetic, sound and ultrasound (2004)* (AS/NZS 2243.5:2004)	

Safety Performance

7. The licence holder must maintain a set of safety performance indicators to be agreed by the CEO of ARPANSA.

Discharge of Radioactive Waste

8. The licence holder must report the airborne discharges from the OPAL reactor to the CEO of ARPANSA annually as percentages of the notification levels set out in Table 1.

Table 1 Annual Airborne Discharge Notification Levels for OPAL Reactor

Gross Alpha (MBq)	Gross Beta (MBq)	Tritium (GBq)	I-131 (MBq)	I-133 (GBq)	Ar-41 (TBq)
Greater than Ambient	200	155	120	3.5	45

Kr-85m (GBq)	Kr-87 (GBq)	Kr-88 (GBq)	Xe-133 (TBq)	Xe-135 (GBq)	All Other Nuclides (MBq)
200	200	600	5	600	500

9. The licence holder must report the airborne discharges from the OPAL reactor to the CEO of ARPANSA quarterly as percentages of the notification levels set out in Table 2. The quarterly report must contain the results of 4-weekly measurements.

Table 2 Periodic Notification Levels

Notification period	Percentage of annual levels in Table 1
Quarterly	50%
4-weekly	20%

10. The licence holder must notify the CEO of ARPANSA of any release in excess of a notification level within seven days of detection. Details of the cause of release, radiological consequences, and actions taken to limit the release must be provided.
11. The licence holder must notify the CEO within 24 hours or the next working day, as appropriate, if a notification level is exceeded by a factor of five. Details of the cause

of release, radiological consequences, and actions taken to limit the release must be provided.

Periodic Safety Review

12. The Licence Holder must, by 30 June 2015, submit to the CEO of ARPANSA a plan to implement the actions resulting from the first Periodic Safety Review in a form acceptable to the CEO of ARPANSA and report on progress in implementing the plan on a six-monthly basis. The plan must include provisions for analysis of interdependencies between safety factors and a program to support continuous improvement in the safety culture against defined performance indicators, including regular surveys by an independent organisation of the safety culture within the operating organisation.

13. The Licence Holder must carry out a Periodic Safety Review that re-examines the safety of the OPAL Reactor taking into account operating experience and international best practice in radiation protection and nuclear safety. A detailed plan for the Periodic Safety Review must be submitted to the CEO of ARPANSA no later than 30 November 2019. The plan and the subsequent carrying out of the Periodic Safety Review must follow the relevant regulatory guidance and must include an international peer review of safety as operated. A comprehensive report and supporting documentation on the findings of the Periodic Safety Review and resulting Action Plan must be submitted to the CEO of ARPANSA no later than 30 November, 2021. The Licence Holder must subsequently submit Periodic Safety Reviews at times decided by the CEO of ARPANSA.

Periodic Security Review

14. The licence holder must submit to the CEO of ARPANSA a detailed review of the physical protection and security systems, taking into account operating experience and developments in the security environment and international best practice in protective security for nuclear installations. The first such review must be completed no later than two years after the date of completion of the commissioning of the OPAL reactor and thereafter at intervals agreed with the CEO of ARPANSA, taking into account developments in the security environment.

Criticality Safety

15. The licence holder must have appropriate arrangements to ensure criticality safety and have a current criticality safety certificate where nuclear materials are handled.

Operating limits and conditions

16. The licence holder must ensure that the facility is operated within the OPAL Operational Limits and Conditions.