



Inspection report

Licence holder: ANSTO Australian Centre for Neutron Scattering (ACNS)	Licence number: S0202
Location inspected: Lucas Heights, NSW	Date/s of inspection: 23 August 2019
	Report no: R19/30675

An inspection was conducted as part of ARPANSA's baseline inspection program to assess compliance with the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act), the Australian Radiation Protection and Nuclear Safety Regulations 2018 (the Regulations), and conditions of source licence S0202.

The scope of the inspection included an assessment of ACNS' performance at Lucas Heights against the source Performance Objectives and Criteria. The inspection consisted of a review of records, interviews, and physical inspection of sources.

Background

ACNS comprises a suite of neutron scattering instruments located adjacent to the OPAL reactor. These instruments utilise neutron scattering and X-ray techniques for scientific and industrial research and provide both Australian and international scientific communities with the capacity to perform experiments in the pursuit of scientific breakthroughs.

The main codes and standards applicable to these sources are those that appear in section 59 of the Regulations plus:

- Australian/New Zealand Standard Safety in laboratories – Part 4: Ionizing radiations (2018) (AS/NZS 2243.4:2018) (the IR Standard)

Observations

In general, the management of radiation safety at ACNS in relation to radiation sources was found to be sound. However, there appeared to be room for improvement in relation to:

- Storage of white area waste near containers of potentially activated waste

Performance Reporting Verification

ACNS have submitted quarterly reports to ARPANSA in a timely manner in recent years, and these contain relevant information including details of compliance with the Act and Regulations.

ACNS has developed a comprehensive Radiation Protection Plan (RPP) to manage planned radiation exposures at the installation. Some instances of referencing previous editions of codes and standards were identified in the RPP. ACNS would address this issue in future revisions of the RPP.

Configuration Management

ACNS hold two licences for its sources. S0171 was for commissioning of new instruments after which they are transferred to this licence, S0202, for routine operation. A third licence, S0045, covered all other sources under ANSTO control including some items located in ACNS such as Class 4 lasers and X-ray analysis equipment. ACNS staff advised that although this arrangement was historic, it is considered to be working well.

It should be noted that the inspection of the S0171 and S0202 licences were held concurrently on this day and this report is the primary version for both. A separate inspection report will be issued for S0171.

Inspection, Testing and Maintenance

The Radiation Protection Advisor reviews the results of regular internal monitoring programs performed on the neutron beam instruments and the results of recent surveys were seen during the inspection.

Maintenance of the instruments is only performed in-house by appropriately trained and qualified technicians and instrument scientists. Records of their training were viewed as part of this inspection.

Training

All personnel using the neutron beam instruments are required to undergo several levels of training commensurate with the equipment to be used. All staff and visiting scientists (users) undergo ANSTO site induction. These personnel then undergo induction training relating to ACNS followed by training specific to the instrument to be used. Staff or visiting scientist only have access to the particular instrument of interest once these levels of training are completed. Records of training for randomly selected personnel were viewed during the inspection.

Event Protection and Emergency Preparedness and Response

The broader ANSTO policy and work health and safety plans outline event protection along with emergency preparedness and response requirements. These were not, however, assessed during the inspection as more rigorous investigation of these documents is carried out during facility licence inspections on site. In order to raise awareness of this issue though, the RPP included a section on 'Abnormal Occurrences/Accidents/Incidents/Event Reporting'.

Radiation Protection

ACNS has demonstrated a commitment to radiation protection by establishing a policy to facilitate the safe and effective use of radiation. The comprehensive RPP with the objective to achieve and maintain best practice and compliance with radiation legislation and ARPANSA licence conditions supports this commitment. Further, ACNS has also prepared a radioactive waste management plan to deal with activated material arising from use of the instruments. Each of the documents meet the requirements of section 61 of the Regulation.

The following observations were made during the inspection:

- Several bags of waste from white area instrument cabins/offices or even cleared material were stored on top of benches within the neutron guide hall. These were located adjacent to yellow drums bearing the radiation trefoil. Even if these bags did not contain radioactive waste, storage of waste bags in this manner represents poor housekeeping.

- The RPP requires that visitors to the neutron guide be issued with electronic personal dosimeters with the doses received being recorded following any visit. This procedure was experienced by the inspectors during the inspection.
- All personal radiation doses are assessed and reported at monthly safety meetings. This analysis considered both absolute dose values and dose trends with a view to the long term overall reduction of personal radiation doses in accordance with the ALARA principle.

Security

The neutron beam instruments are not captured by RPS11 however, ACNS security arrangements are covered under the overall ANSTO Lucas Heights security arrangements.

Findings

The licence holder was found to be in compliance with the requirements of the Act, the Regulations, and licence conditions.

The inspection revealed the following **area for improvement**:

- The ACNS waste storage arrangements need to be reviewed in accordance with the IR standard, and the housekeeping be strengthened in order to reduce the potential for accidents.

It is expected that improvement actions will be taken in a timely manner.

No written response to this report is required

THIS REPORT WILL BE PUBLISHED ON THE ARPANSA WEBSITE