



Inspection report

Licence holder: ANSTO Camperdown	Licence number: F0251
Location inspected: Camperdown, Sydney	Date/s of inspection: 26 November 2019
	Report no: R19/13404

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 facility licence F0251.

The scope of the inspection included an assessment of the Australian Nuclear Science and Technology Organisation's performance at Camperdown against the facility Performance Objectives and Criteria (PO&Cs) in the following areas: Event Protection, Security, Radiation Protection and Emergency Preparedness and Response. The inspection consisted of a review of records, interviews, and physical inspection of the facility.

Background

ANSTO's Camperdown facility houses a commercially available 18 MeV cyclotron used for the production of both Carbon-11 (C-11) and Flourine-18 (F-18) from irradiated targets. The cyclotron is housed within a heavily shielded bunker and is operated remotely from a control room. Whilst radiation levels inside the bunker during its operation are extremely high, these drop rapidly to tolerable levels within a few minutes when power to the beam is cut. The facility makes use of various hot cells, laboratories and other rooms, to prepare radiolabelled compounds. These C-11 or F-18 compounds are powerful but short lived radiation sources with a half-life of 110 minutes and 20 minutes respectively. This facility, which is primarily research focussed, collaborates with the University of Sydney's Brain and Mind Centre and other Sydney hospital centres and falls under the banner of ANSTO's Nuclear Science & Technology and Landmark Infrastructure (NSTLI) group.

Observations

In general, the management of safety and security at the Camperdown facility was found to be satisfactory and in compliance with the Act and Regulations. The areas for improvement (AFI) from the last inspection were discussed to understand what actions had been taken in order to resolve previously identified issues. While others are referred to within the body of the report as they relate to the inspected PO&Cs, change management will be addressed separately.

The change management process has been revised to ensure that any change with a potential to negatively impact safety, will initiate the formal change control process. All potential changes are tabled at a weekly operations meeting and a triage step has been introduced.

Event protection

This PO&C concerns ANSTO's consideration and controls regarding the effects of outside influences that may impact the safety of the facility. Examples include adverse weather, flooding, impact to the building structure from vehicles, cranes and trees, fire, pests, and loss of offsite services such as electricity, gas and water.

The building fire protection systems are serviced and maintained by a specialist contractor, Wormald. Scheduling is managed within the ANSTO maintenance management system (SAP). The SAP system, per the schedule, will generate a work order which is released by a planner within ANSTO's Asset Management and Engineering (AME) group. This will then be provided to the head of maintenance at Camperdown detailing the works to be completed and is then signed off by the facility manager. The systems and maintenance records were visually inspected and found to be satisfactory.

The general condition of the building was examined on a facility walk-through. It was found to be well maintained and tidy. Pest control was evident both inside and outside the building. ANSTO stated that pest control inside the building was precautionary and there was no known issue regarding vermin entering the building. ANSTO reported that storm water pumps had recently been replaced. No compliance issues or areas for improvement were identified.

Security

This PO&C concerns the effectiveness of security measures that prevent the unauthorised access or damage to, the loss, theft or unauthorised transfer or the unauthorised use of a radiation source or facility.

Camperdown management is supported by the ANSTO Security Group in determining arrangements for security at Camperdown. A specialist provider (MSS Security) is used to supply guarding and day-to-day security management to the facility. Records showed that the ANSTO security plan has been reviewed and signed off by the ANSTO security experts. Camperdown management stated that they work well with the ANSTO security group to respond to any security issues and provided a recent example of this. A review of incident reports found that there were no significant security incidents during the review period.

Access is primarily controlled by the Facility Manager. Inductions which include specific sections on security must be completed by staff before unescorted access is granted and the level of that access is based on the staff member's need-to-go.

Multiple security documents exist which cover the Camperdown facility. MSS security, in conjunction with the ANSTO Security group, have developed a standard operating facility/security plan specific to Camperdown; the facility has developed a specific security plan as part of the Plans and Arrangements; and the wider ANSTO security plans and policies also cover security elements for the facility. While Camperdown management has accountability for safety and security, staff had not been actively involved in the development of the security arrangements nor were they aware of any security risk assessment which would underpin such arrangements. ANSTO's Physical Security manager highlighted that the security arrangements in place at Camperdown are well within the parameters of what has been assessed at the greater ANSTO level. Work is currently being done on security risk assessments for facilities whose needs may require a more specific approach. ANSTO stated that in doing so, if Camperdown's needs were identified as requiring extra security solutions then the staff will be consulted through the process as they possess specific knowledge for that facility.

Radiological protection

The objective of this PO&C is to verify that the exposure to radiation and its effects is controlled thereby protecting people and the environment from the harmful effects of radiation and radioactive materials.

In the past a dose constraint of 15 mSv applied to Camperdown workers. As part of an organisational review into dose optimisation this constraint has been lowered to 1 mSv based on a review of routine planned exposures in accordance with recently developed guidance (AG-1372). This is a positive change and is likely to emphasise the benefit of careful planning and best practice in the conduct of radiation work and lead to optimised doses to workers.

AFIs from the previous Camperdown inspection focussed on standardising practices for developing procedures and bi-directional learning. While identified from that inspection, these AFIs are also aimed to influence ANSTO as a whole. Accidents with the handling of unsealed sources at ANSTO's Health Products business have raised questions regarding the worker awareness of the harm these compounds may cause. Following a specific accident, that facility introduced hazard notifications in their documentation to increase worker awareness regarding the activities they were performing. Radioisotopes used in ANSTO's Health Products have similar risks to those produced at the cyclotron. Camperdown has been slowly introducing their own system however the potential harm to staff from performing certain activities has not yet been incorporated. It is not clear when harmonisation of systems will occur due to competing priorities. The absence of statements in work instructions regarding the potential harm that can arise from Camperdown processes is an area for improvement.

ANSTO advised that following an accident involving an unsealed source in ANSTO Mo-99 production facility in June 2019, ANSTO's Radiation Protection Services had embarked on targeted training of staff in certain facilities. The training is to raise awareness of good practice, hazard awareness and hazard consequences. It is intended that Camperdown operations will be included in this program.

Emergency preparedness & response

Camperdown has developed an Emergency Management Plan within their Plans and Arrangements and has a separate specific Emergency Procedure (P-4092). However this procedure is not referenced in the management plan.

In accordance with P-4092, emergency arrangements are to be tested by conducting an exercise at least once every twelve months. In May of this year, Camperdown conducted a desktop emergency drill. The scenario tested was a major fire resulting in building damage which led to flooding. Records indicated that a number of lessons had been identified and some measures had been implemented via the ANSTO GRC system to further strengthen safety arrangements.

Emergency equipment was inspected during a walk-around of the facility and was found to be in the correct locations. Generally the equipment was found to be within its inspection/service date, however two units of compressed air breathing apparatus located in the change room were found to have passed their expiry date as they were not captured within the SAP maintenance management system.

As noted in the previous inspection which contributed to an AFI, emergency response information specifically for Camperdown referred to in P-4092 could not be found. While a new radiation contamination/spill response flow chart was available within the laboratory area, the other three emergency response documents (fire (AG-5718), general accident requiring ambulance (AG-5719) and major leak (AG-5720)) could still not be produced. Inspectors were informed that these documents are no longer in place and need to be removed from the procedure.

Thus an area for improvement in terms of emergency preparedness and response has been identified in broad terms.

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 **areas for improvement**:

1. Review of hazard notifications within documentation
2. Review and update of emergency arrangements

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

No written response to this report is required

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