



# Inspection report

<b>Licence holder:</b> ANSTO	<b>Licence number:</b> F0157
<b>Location inspected:</b> OPAL Reactor, Lucas Heights, NSW	<b>Date/s of inspection:</b> 24-25 June and 6 July 2020
	<b>Report no:</b> R20/05672

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 F0157, Inspection report, R20-05672.

The scope of the inspection included an assessment of ANSTO’s performance against the Performance Objectives and Criteria (POC) in Emergency Preparedness and Response, Event Protection and Performance Reporting and Verification. Aspects of the ANSTO Central Emergency Management (EM) function were also inspected in relation to the support service provided to the OPAL reactor in emergency preparedness and response. The inspection consisted of a review of records and interviews.

## Background

The OPAL facility is a low power, multipurpose research reactor that provides a variety of benefits to the community including nuclear medicine, research, and the production of isotopes.

## Observations

The licence holder was found to be in compliance with the Act, the Regulations, and licence conditions with respect to Emergency Preparedness and Response, Event Protection and Performance Reporting and Verification. The inspection also concluded that overall, the OPAL reactor continues to reflect the principles of these POC in its controls, behaviours and management system.

Two Areas for Improvement (AFI) were identified.

The AFI raised at the last OPAL Emergency Preparedness and Response and Event Protection Inspection in February 2018, related to formal training requirements of the ANSTO Central EM response teams, has been addressed through the introduction of the ANSTO Business Resilience Learning and Improvement strategy, which started to be rolled out in 2019. The second AFI raised at the 2018 inspection is discussed further on page 2 of this report.

## *Emergency preparedness & response and Event protection*

### Key observations for the Central ANSTO EM function

Since 2018, ANSTO Central EM has, as part of a Sub Committee (which included ARPANSA representatives) authorised by the NSW State Emergency Management Committee (SMEC) and Sydney Metropolitan Regional Emergency Management Committee (REMC) updated the Lucas Heights Emergency Sub Plan and produced the supporting technical document AG-4552 Lucas Heights

Radiological Hazard Assessment and Protection Strategy. The changes, amongst other areas, captured changes in ANSTO facilities, revised threat and hazard assessments and aimed to align with relevant parts of new IAEA Safety Standard Series No GSR Part 7: Preparedness and Response for a Nuclear or Radiological Emergency.

In addition, the ANSTO Emergency Management Plan Lucas Heights (AG-5950) and the ANSTO Emergency Management Plan (AG-5945) were updated to reflect these revised documents and also to include new response sub plans for a number of emergency scenarios.

The roll out of the ANSTO Resilience Learning and Improvement Strategy under AG-4532 began in 2019 (intended to be a 3-year roll out). This strategy includes, amongst other areas, improved oversight of incident management competencies, incident preparedness, lessons learned and conduct of emergency exercises and training, to ensure the skills and competencies of ANSTO EM staff are developed, measured and documented.

At the time of the inspection, it was noted that improvements related to ANSTO central EM such as competencies and skills (section 5 of AG-4532), management and oversight of lessons learned (section 7 of AG-4532) and the requirement for annual major exercises (section 9 of AG-4532) to test key EM teams against Australasian Inter-service Incident Management System (AIIMS) had not yet been rolled out. However, these were intended to be implemented with the recent recruitment of a key staff member.

A number of inconsistencies were found relating to training requirements, incident level nomenclature, number of emergency scenarios and the role of the Business Resilience Working Group in exercises, among documents such as AG-4532, AG-5945, AG-5950, AG-2973 and AP-2361. It was reported that these would be addressed in an upcoming document review.

Training records for a selection of staff involved in ANSTO Central EM teams such as Incident Controllers, Crisis Management Team and Crisis Assessment Team were checked at the inspection and it was noted that these staff had undergone the AIIMS training, which, aligned with ANSTO guide AG-4532. In addition, the roll out of new EM training was noted such as the Emergency Workers and Guidance Values for Restricting Exposures and the Radiological and Nuclear Emergency Preparedness and Response. No significant issues were identified with the training records.

Exercises conducted by Central EM response teams were reviewed including the June 2019 Simulated 'Alkoomi Flash' exercises. No issues were raised with the exercise records although it was noted that the lessons learned and actions from the exercises were not being managed in the ANSTO GRC system as per the guideline of section 9 AG-5950.

Records of debriefs from three incidents from 2019 and early 2020 were also inspected. While no significant issues were raised based on incident management, it was found that the actions section of the incident debrief forms were incomplete and no lessons learned had been entered into the ANSTO GRC to date. At the time of the inspection a lack of resources due to staff turn-over was highlighted as the reason for these omissions. It was noted also that a key staff role was to be filled the week of the inspection.

ARPANSA POC 5.1.5 states "lessons from operational events, drills, training and exercises are identified and learnt. Learning is evident in the revisions of emergency response plans, procedures, and instructions, and is incorporated into training." Therefore, an AFI is raised so that previous and future lessons learned are identified and appropriately managed as actions to completion. It is noted that at the February 2018 inspection a similar AFI was raised to highlight the need for Executive oversight of the EM function so that lessons learnt could not be overlooked due to staff turnover. Although that AFI was completed, the opportunity to apply the lesson in a broader sense was missed.

The ANSTO Annual NSW Rural Fire Service (NSWRFS) inspection report from September 2019 and the recommendations were reviewed. No issues were raised, noting that the majority of the actions had been closed or were intending to be closed prior to the next bushfire season.

### ***OPAL Emergency Preparedness & Response and Event Protection***

Key observations specific to the OPAL licence were as follows:

Since the last inspection in 2018, OPAL has conducted seven emergency exercises/drills including the biennial major exercise (required by OP 16 OPAL Reactor Emergency Preparedness Plan). Two exercises are drafted (the next biennial exercise and a security-based exercise) but have not yet been completed due to the COVID-19 pandemic restrictions.

These exercises covered a number of the OPAL Emergency Instructions and testing of functions such as OPAL cooling towers sprinkler test, seismic incidents, contamination of staff, rescue of injured persons and review of the operating instructions for an extended station blackout. It was also noted that emergency external responders continue to participate in exercises and visits to maintain familiarity with the facility.

The exercise reports and planning instructions were examined and no significant issues were raised with the content or executions (noting that ARPANSA attended a number of these as a witness). All lessons learned had been captured in the ANSTO GRC. The progress of actions from a selection of exercises conducted in 2015 and 2016 were also checked and found to be completed.

However, an area for improvement was identified based on the fact that production of the final report for the last two biennial major exercises (in 2016 and 2018) and entry of lessons learnt into the ANSTO GRC for management were not managed in a timely manner in both cases. This was combined with the AFI raised on ANSTO Central EM as both are related to POC 5.1.5

Ongoing OPAL Business Resilience Plans for the COVID-19 pandemic were reviewed and no issues raised in terms of impact on nuclear or radiological safety at OPAL.

Training records for OPAL shift managers on emergency exercise scenarios (including the scenarios posed and the schedule for the rest of 2020) were reviewed from 2018. All of the emergency instructions OOI-7268 were noted to have been covered. No significant issues were raised.

Records of the annual Incident Reporting Systems for Research Reactors (IRSRR) incident reviews conducted as per action 100 of the last OPAL Periodic Safety Review were inspected for 2019 and 2020. No issues were raised. The last AF-2534 Bushfire Preseason Building Check and Preparation record and actions were inspected for the reactor buildings and found to be complete.

Records of the last two testing of emergency equipment (OOF 057) and control of chemicals (OOF 087) were inspected. In addition, records of the last annual checks of the OPAL fire protection systems (including sprinklers, detection system, hydrants, extinguishing systems and intercoms for emergency services) were examined. No significant issues were raised.

Records of Operating Limits and Conditions Surveillance Requirements covering parts of the Post Accident Monitoring System (PAM) (SR 3.3.4.2 and 3.3.4.3), the Emergency Control Centre (ECC) Ventilation and Pressure System (SR 3.6.5.1 to SR 3.6.5.4), Loss of Power Instrumentation (SR 3.3.5.2), the Hot Cell Ventilation System (SR 3.5.4.3 and 3.5.4.4) were examined.

Whilst it was found that all surveillance requirements had been completed within the required timeframe, an area for improvement was raised for SR 3.6.5.3 and SR 3.5.4.4 relating to the

improvement of co-ordination of the testing and reporting of filter samples. Both above-mentioned surveillance requirements consist of multiple tests to satisfy the overall requirements. Some tests are carried out on samples that are tested off-site while the rest are tested in-situ. The records examined contained a number of inconsistencies, such as missing the tester's signatures and sampling dates. These inconsistencies could present complications to the Reactor Shift Manager who signs-off the surveillance requirements during the reactor operation based on the multiple individual test records and certificates.

### ***Performance reporting and verification***

Reporting conducted against licence condition requirements including quarterly reporting and updates on the Periodic Safety Review actions since the last Performance Reporting and Verification inspection in 2018 were reviewed and no significant issues raised.

A number of event investigations were reviewed and the status of actions checked. No significant issues were raised.

Recent actions taken by the licence holder as a result of longer-term trends identified in events were reviewed, such as inclusion of an objective for improved contractor management and access in the Reactor Operations Business Plan 2019-2023 OM14 and subsequent actions taken such as amended induction training and access control actions. No significant issues were raised. Ongoing long-term analysis of operating experience as part of the preparation for the 2021 Periodic Safety and Security Review was also noted.

Recent improvements related to human factors were noted such as the update of instruction OI 34, improved identification of plant valves and collaboration with the Netherlands NRG High Flux Reactor to share information on Human Factors Engineering were noted.

In addition, it was noted that ANSTO was looking into external training regarding human factors centrally at the time of the inspection, with the intent of rolling this out to staff.

### **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. Lessons learned and completion of reports from emergency drills, training, and operational events were not always managed in a timely manner.
2. Co-ordination of the surveillance testing of filter samples under SR 3.6.5.3 and SR 3.5.4.4 and record keeping were inconsistent.

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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