



# INSPECTION REPORT

<b>Licence Holder:</b> ANSTO Open Pool Australian Light Water Reactor (OPAL)	<b>Licence Number:</b> F0157
<b>Location inspected:</b> Lucas Heights, NSW	<b>Date of inspection:</b> 6 -10 June 2016
	<b>Report No:</b> R16/07045

This is the record of an inspection conducted under Part 7 of the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act) as part of ARPANSA's baseline inspection program. The purpose of the inspection was to assess compliance with the Act, the *Australian Radiation Protection and Nuclear Safety Regulations 1999* (the Regulations), and conditions of Facility Licence F0157.

The scope of this inspection included assessment of performance in the area of security of OPAL reactor operation and relevant ANSTO support services.

The inspection was carried out against the ARPANSA Security Performance Objectives and Criteria (PO&Cs). All findings are based on factual evidence obtained during the inspection. The inspection consisted of a review of documentation, records, interviews and physical inspection of the facility.

## Background

The ANSTO OPAL facility is a 20 MW, multipurpose research reactor that provides a variety of benefits to the community including production of radioisotopes for nuclear medicine and neutron scattering research. Consideration was given to ANSTO's plans, arrangements and practices that ensure that effective measures preventing unauthorised access, theft or damage to the facility and radiation sources are in place.

## Observations

Generally, the security and safety linkages between ANSTO Security and the OPAL reactor have significantly strengthened through improved communications between these two business units. This underpins an effective cooperative environment.

The ANSTO Protective Security System has undergone a comprehensive upgrade as part of the ANSTO Physical Protection and Security Upgrade Project (PPSU) since 2012. There have been significant improvements in detection and assessment capability. These initiatives reflect a continuation of a defence-in-depth approach to security of the OPAL reactor.

The penetration testing and security system evaluations conducted in recent years have demonstrated adequate effectiveness of the security system in place.

The following observations were made:

## Supplementary Training

Both ANSTO Security and OPAL reactor facility have mature programmes of exercises, drills and practical training. Drills and exercises are conducted to test responses and assess security system effectiveness. The programmes are planned well in advance and cover an appropriate variety of scenarios. The approval of this training follows the formal process.

The practical training comprises a wide range of activities from simple training scenarios to comprehensive exercises involving the whole ANSTO site and external organisations. All practical training is adequately

documented. The lessons to be learnt were identified and logged into the ANSTO or OPAL action tracking systems, respectively. The actions were implemented within reasonable time frames. No actions were found to be outstanding for an excessive period of time.

In addition to the periodic emergency drills that also cover security aspects, OPAL Reactor Operations Group has developed a supplementary programme of practical training scenarios. Various emergency situations are practiced in accordance with the developed plan that focuses on the OPAL operational personnel. The benefit of these drills was acknowledged by OPAL personnel. This programme was found to complement the mandatory training schedule required by the OPAL business management system and it is recognised to be a good practice.

### **ANSTO Security Maintenance Process Formalisation**

The security system maintenance forms a part of the quality management system. The ANSTO Security Operations personnel concurrently use a comprehensive set of processes that include, for example, event logging, maintenance management, and triaging modes of access control failure. The ANSTO Security Operations personnel were enthusiastic about implementation of the processes, as well as improving the communication between OPAL reactor facility and ANSTO Security. However, the set of relevant procedures, tracking assessment and communication instructions underpinning these successful security operational processes have not been completely captured in the ANSTO business management system. Formalising the multifaceted processes under the security quality management system would support the long-term sustainability of the physical security upgrade programme.

In addition to developing a comprehensive set of maintenance processes for physical security maintenance, ANSTO Security Operations has developed a system for assessing and analysing trends associated with specific or recurring security events. This may include operation of individual items such as security doors or access system, events related to human behaviour as a result of alterations to a building, or changes in a building use that influence personnel access routes with impact on security monitoring and alarms. This approach has been recognised to be beneficial in improving the security culture across the ANSTO site. It also empowers ANSTO Security to make decisions of how best to address recurring physical security access and alarm issues which allow for effective and efficient management of security personnel time and resources.

### **Training records**

The OPAL reactor training programme is well developed and covers a wide range of courses and training units according to the reactor training curriculum. The OPAL reactor security specifics are integrated into the relevant training units for the initial and ongoing training for the operational personnel.

The site-wide security training, which is applicable to all ANSTO personnel, is based on the internal requirements arising from the ANSTO Security Policy and other relevant ANSTO documents. The records for all security training of the OPAL reactor personnel are currently maintained by the new Learning Management System (LMS) that has recently been rolled out at ANSTO. The historical records were not migrated to the LMS.

Although some training records archived in the previous training management system (Pathlore) were difficult to obtain, they were trackable using other systems in place. No security training of the personnel sampled was found to be out of date.

### **OPAL Reactor Security Plan**

The ANSTO Security and Safeguard Policy sets the framework of arrangements by which ANSTO manages security. The hierarchy of lower level documents that are based on the policy was found well advanced.

The OPAL Reactor Security Plan, which is established on the ANSTO Site Security Plan, has been developed to address the reactor specific security needs. It was prepared in support of the OPAL reactor licence

application and was never regarded as a standalone security plan. A number of local security specific procedures and instructions have been developed based on this security plan. For example, 'OP 17 Security Management' is an operational procedure describing the arrangements for the physical protection of the OPAL reactor and has been based on the OPAL Reactor Security Plan.

There is also an OPAL emergency operating instruction that is followed should a security event occur. In such a case, the OPAL Security Plan would not be used.

The security plan for a controlled facility such as the OPAL reactor forms part of the plans and arrangements for managing safety as identified under regulation 49 in Schedule 3 of the Regulations. Although the relevant security related procedures and instructions managed under the OPAL Business Management System (BMS) have been updated periodically, the Reactor Facility Security Plan was prepared in 2004 and has not been updated.

Consequently, the content of the plan was found to be outdated and not aligned with the IAEA *Nuclear Security Series No.14 Nuclear Security Recommendations on Radioactive Material and Associated Facilities* recommendations. For example, the missing information included the description of radioactive material or security systems installed. Therefore, the plan was found to deviate from the ANSTO intention to base specific security plans upon principles published by the IAEA (ANSTO Agency Security Plan). The IAEA documentation has been recognised by ANSTO to be best international practice.

The review process of the security plan was found to deviate from the ANSTO internal protocol established in the ANSTO Security Plan, which stipulates the security plans and arrangements to be reviewed every two years, or as circumstances change. In fact, ANSTO missed a number of opportunities to trigger the reactor facility security plan update process, including the issuing of a new Design Basis Threat (DBT) in 2012, and a 'Protective Security Risk Assessment of ANSTO and its Facilities' conducted in 2012. The latter flagged changes in the overall risk landscape at ANSTO.

The Reactor Facility Security Plan was not managed within the ANSTO document quality assurance system which further restricted access to the information on the plan and ANSTO's capacity to maintain the currency of the document and update the plan in accordance with regulatory requirements. This may indicate that the document was not entered into the quality management system.

It is acknowledged that ANSTO self-identified the document accessibility issue in 2015, and initiated a review and de-classification process of the Reactor Facility Security Plan. A draft declassified version of the OPAL Reactor Facility Security Plan was sighted during the inspection.

Regulation 50 of the Regulations stipulates that the holder of the licence must, at least once every three years, review and update the plans and arrangements mentioned in Regulation 49 in relation to the licence; and must keep and maintain records of any change made. The evidence indicated that the Reactor Facility Security Plan has not been updated to meet this requirement. This plan is called upon by the lower level documents and is considered to be one of the important documents in managing security at the OPAL reactor. It is imperative that this security plan be maintained in accordance with regulatory requirements. Therefore, considering the findings above, ANSTO may be found non-compliant with this regulation.

In addition, it appears that ANSTO became aware of this condition in 2015, when the plan review was instigated. Because this condition is a potential non-compliance with Regulation 50 and should have been recognised as such, Regulation 45 (1) required that the licence holder investigate this potential breach. Regulation 45 also requires that the licence holder informs the CEO of ARPANSA as soon as practicable. ARPANSA had not been informed about this potential non-compliance prior to the inspection nor was it made aware of an associated investigation. Therefore, ANSTO may also be non-compliant with Regulation 45.

Whereas these potential non-compliances are related to the administrative measures in place, the examined aspects of the physical security systems did not show any deficiency in defence-in-depth.

## Findings

The potential non-compliances of the licence holder with the following regulations were identified:

### Potential Non-compliances:

1. The review of OPAL Reactor Security Plan was not conducted within the frequency required by Regulation 50 (1) of the Regulations.
2. Because the non-compliance had been identified by ANSTO during review of the OPAL Reactor Security Plan in 2015, the licence holder was non-compliant with Regulation 45 because (a) an ANSTO investigation of this potential non-compliance appears not to have been conducted, and (b) ARPANSA was not informed about the potential non-compliance.

### Performance Deficiency:

ANSTO Security Operation's performance may be improved by addressing the inconsistency in application of the ANSTO quality control system.

### Good Practice:

The inspection also revealed a good practice that involved development and use of a programme of practical training scenarios, which is supplementary to the mandatory emergency training.

In response to any potential non-compliance, the licence holder must carry out its responsibilities as per Regulation 45.

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