INSPECTION REPORT

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<tr>
<th>Licence Holder: ANSTO Health</th>
<th>Licence Number: F0262</th>
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<tbody>
<tr>
<td>Location inspected: Mo-99 Production Facility and Goods Finishing Facility, Lucas Heights, NSW</td>
<td>Date of inspection: 22 – 26 February 2016</td>
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<td>Report No: R16/02112</td>
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ARPANSA conducted an inspection under Part 7 of the Australian Radiation Protection and Nuclear Safety Act 1998 (the Act). The purpose of the inspection was to assess compliance by ANSTO Health with the Act, applicable regulations, and conditions of Facility Licence F0262. The inspection was conducted as part of ARPANSA’s baseline inspection programme.

The scope of the inspection covered Inspection, Testing and Maintenance (ITM); Radiation Protection; and Event Management. The inspection consisted of reviews of facility records, interviews with facility personnel, and visits to facilities.

Background

ANSTO Health comprises the fission molybdenum-99 (Mo-99) production facility, the facility for processing and handling of irradiated target material, and the facility for manufacturing of radiopharmaceuticals. Various radionuclides are used or processed in these facilities.

Observations

**Inspection Testing and Maintenance**

Inspection Testing and Maintenance is important because it ensures that safety functions are maintained. A comprehensive programme of ITM is managed systematically and transparently through the ANSTO site-wide computer based SAP system. ITM is sometimes undertaken by ANSTO Health personnel; in some instances, however, it is performed by qualified personnel in other ANSTO departments under service level agreements. Occasionally, ITM is outsourced to external contractors.

In general, systems are in place to ensure that workers undertaking ITM have the necessary competencies and are suitably trained, qualified and experienced in knowledge of the plant and facilities. ITM is undertaken using written and approved procedures and instructions, and work orders for each task.

Under service level agreements that include personnel competency and training requirements, Facilities Management embeds staff within ANSTO Health for dedicated ITM. Accountabilities are established through ANSTO Health while administrative matters are through Facilities Management. ITM activities performed under service level agreements are entered into SAP and their satisfactory completion is monitored by ANSTO Health, through SAP.

ANSTO uses a third party contractor to register and verify qualifications and competencies of contractors undertaking work at the ANSTO Health facilities, including ITM work that is important for safety or
security. The web-based system can be interrogated by ANSTO Health management and appears to be an effective way of ensuring themselves of the qualifications, competencies, training and experience of personnel of such contractors. Contractor Supervisors within ANSTO Health manage the safety of contractors and supervise their work through checklists and audits within the ANSTO business management system.

Examples were provided of experience and results of ITM used to continually evaluate and improve design and performance. Work orders have sign-off requirements for feedback on lessons from each ITM task. These lessons are discussed at bimonthly communications meetings and in workshop and daily toolbox talks to improve performance and safety across all ANSTO Health facilities.

Radiation Protection

Radiation Protection services at ANSTO Health are provided by dedicated Health Physics Surveyors (HPS) and Radiation Protection Advisers (RPA) who are generally located at the facilities. They interact directly with the ANSTO Health staff. Every quarter the RPA produces a Key Performance Indicator report which trends staff radiation exposure against targets, ANSTO Health reported radiation events, and the number of HPS monitoring tasks and clearances undertaken.

All radiation monitors at ANSTO Health are maintained, serviced and calibrated by the ANSTO calibration service. Health Physics surveyors provide monthly dose reports to the ANSTO Health facility managers which are then distributed to the operational units. A Safety Improvement Team meeting is held monthly to focus attention on radiation safety trends, incidents etc. An example of a recent radiation protection initiative was the review of all fixed radiation monitors at ANSTO Health to establish if alarm levels and location of the detectors is appropriate. This initiative was taken as the result of a lesson learned from the Camperdown Facility where an incident occurred resulting in alarms being defeated due to incorrect location of the detector and/or incorrect alarm level settings. Although this review is not yet complete, this is consistent with good performance improvement measures where learning opportunities are identified from within and outside the organisation, and corrective actions taken.

Another recent noteworthy initiative in the Radiation Protection area was the production of the “Radiation Safety Best Practice” guideline, AG 2688, which was produced in order to consolidate radiation protection guidance into one document whereas before this information was located across several documents.

Recent dosimetry results for ANSTO Health were reviewed during the inspection. Section 1.3 of the ANSTO Radiation Safety Standard AS 2310 states:

Where it is shown that the annual radiation dose during the normal conduct of experiments, processes and operations is greater than 2 millisieverts to any occupationally exposed person, and greater than 0.02 millisievert to any member of the public off-site a formal ALARA assessment is required.

According to dosimetry results for ANSTO Health for the quarter ending September 2015, approximately 30% of ANSTO Health staff has received an effective dose greater than 2 mSv per annum. According to the standard, the licensee should have performed a formal ALARA assessment. ANSTO Health were unable to provide any recent formal ALARA assessment of ANSTO Health staff with exposures greater than 2 mSv per annum, and thus were not able to demonstrate that doses received were optimised in line with their current Radiation Safety Standard AS 2310.
Event Protection

Evidence was provided that ANSTO Health had considered and implemented controls to ensure the effects of outside events on its facilities do not result in unsafe nuclear or radiation conditions. Events considered include fire, flood, earthquake, lightning strike, severe weather events, loss of services and attack by rodents or other pests. Procedures and instructions are in place to reduce the vulnerability of the facility to external threats.

Standby systems such as uninterruptable power supplies are in place to maintain safety functions in the event of failure of electrical and water services to the facilities. These systems can be isolated when needed and production processes discontinued and made safe. Seismic restraints are fitted and maintained to vulnerable equipment whose failure could lead to unsafe conditions, such as was observed on the 10 tonne Dangerous Goods Rated crane in the Mo-99 production facility which transports irradiated targets. Facility modifications and additions meet established seismic requirements.

The inspectors observed that infrastructure is in good order and land management practices are implemented to reduce external safety hazards and security threats. Security Systems are maintained and operational. A building management checklist is completed annually to provide verification of the state of the facilities and their surrounds. It was observed that the latest annual building checklist was not complete since one item (gutter cleaning) was to be performed by Facilities Maintenance under a regular preventative maintenance schedule. It was concluded that this should have been verified at the time of the annual building check by interrogation of the maintenance records. The Performance and Objectives criteria for ITM state that arrangements should be in place to ensure that contractor work is properly supervised, and that the licence holder maintains effective ‘ownership’ of contractor work.

It was confirmed before the end of the inspection that this maintenance item had been undertaken.

Findings

The inspection concluded that the performance in the inspected areas met applicable requirements. However, two performance deficiencies were identified.

Performance Deficiencies:

1. ANSTO Health is unable to demonstrate that doses received by staff were optimised for staff with annual exposures in excess of 2 mSv per annum. A formal ALARA assessment was not performed as required by the ANSTO Standard AS 2310.

2. Although mechanisms are available under the ANSTO business management system, at times there is a lack of formal and systematic oversight of completion of some Inspection Testing and Maintenance undertaken by other ANSTO departments under service level agreements.