



**Australian Government**

**Australian Radiation Protection and Nuclear Safety Agency**

## INSPECTION REPORT

<b>Licence Holder:</b> ANSTO Waste Operations	<b>Licence Number:</b> F0260
<b>Location inspected:</b> Lucas Heights	<b>Date of inspection:</b> 09 – 13 May 2016
	<b>Report No:</b> R16/05735

ARPANSA inspectors 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 Waste Operations with the Act, applicable regulations, and conditions of Facility Licence F0260. The inspection was conducted as part of ARPANSA's baseline inspection programme.

The scope of the inspection covered the areas of 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 operational areas licensed under F0260.

### Background

ANSTO Waste Operations comprise facilities for the handling, processing and storage of low and intermediate level radioactive wastes. Activities include storage and treatment of low and intermediate level liquid radioactive wastes; storage of nuclear material; storage, inspection and handling of spent nuclear fuels, active components and radioactive sources; and cells for handling active components, radioactive sources and collection, packaging and encapsulation of intermediate solid radioactive wastes.

### Observations

#### ***Inspection Testing and Maintenance***

A comprehensive programme of ITM, to ensure that safety functions are maintained in facilities operated by ANSTO Waste Operations, is managed systematically through the ANSTO site-wide computer-based SAP system. ITM is undertaken by ANSTO Waste Operations personnel and by specialised personnel external to ANSTO Waste Operations (such as ANSTO Facilities Maintenance) under service level agreements; and by external contractors.

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

Under service level agreements that include personnel competency and training requirements, ANSTO Facilities Management train staff within ANSTO Waste Operations facilities for ITM. Accountabilities are established through ANSTO Waste Operations 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 Waste Operations through SAP.

ANSTO uses a third party contractor to register and verify qualifications and competencies of contractors undertaking work at the ANSTO Waste Operations facilities, including inspection, testing and maintenance work that is important for safety or security. The web-based system can be interrogated by ANSTO Waste Operations 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 Waste Operations or Facilities Management manage the safety of contractors and supervise their work through checklists and audits within the ANSTO business management system.

The ANSTO Asset Management Policy requires that “asset management systems and practices are based on international best practice” and “subject to review and continual improvement through benchmarking, performance measurement, reporting, analysis, corrective actions, audits and management reviews”. ANSTO Asset Management Plan AG-6659 Action 3.11.1 is to “Rationalise processes for reporting and responding to events with safety implications by establishing a consistent and integrated ANSTO-wide system and associated processes” (this is currently being implemented through the roll out of the GRC Cloud system).

Examples were provided of site-wide improvements to assets and management systems, such as cranes, resulting from lessons learned during inspection, testing and maintenance. However, this appears to have been an ad hoc process, rather than having resulted from any formal, systematic process to capture, analyse and disseminate lessons learned from the ITM programme.

For example, ARPANSA inspectors observed that, although annual cleaning had been undertaken in November 2015 to reduce fire loads, as required by the SAP maintenance schedule, some gutters of B59 were overflowing with leaf litter. Cleaning of B59 gutters in addition to the annual cleaning, had been requested by the building manager, and undertaken, between the preceding annual maintenance tasks. This apparent need for more frequent than annual cleaning of B59 gutters has not been captured formally and fed back into the maintenance schedule.

ARPANSA inspectors concluded that experience and results of inspections, testing and maintenance of ANSTO assets are not yet captured in an effective, formal, systematic way for routine evaluation and analysis to facilitate ongoing understanding, learning and feedback into continuous improvement of safety and security performance across similar ANSTO assets.

In general, the items important to safety (such as ventilation, shielding and cranes) have been identified and categorised in terms of safety and process constraints and are well defined and documented within the ANSTO Waste Operation's Safety Analysis Report (SAR). Key maintenance, inspection and testing of safety functions for items important to safety are described throughout relevant sections of the SAR. However, ANSTO has not always identified and documented dangerous goods rated cranes used in waste operations as items important to safety and crane failure in safety assessment of facilities. For example:

- Appendix B to the Safety Assessment of the Intermediate Level Liquid Waste Management at ANSTO Waste Operations (ANSTO/T/TN/2012-20 rev 2) requires the guideword "crane" to identify hazards. The word "crane" has not been used to identify the risk of internal event of a crane failure within the ILLW facility.
- Part 2 Chapter 14 of the SAR describes the "10 T Dangerous Goods rated gantry (12.5 T Maximum Rated Capacity) crane runs the length of the building and "There are potential risks of collision and dropping of items using the crane, however personnel are trained in the safe use of the crane and all chains/slings are inspected regularly to ensure they are safe to use". The ANSTO safety classification has not been applied to the ILLW crane.
- Safeguards and Controls relating to ILLW crane safety, such as crane testing and inspection requirements, have not been documented in ANSTO/T/TN/2012-20 rev 2.
- Part 2 Chapter 9 of the SAR describes the "A 10.3 T Dangerous Goods rated gantry crane (12.5 T Maximum Rated Capacity) runs the full length of the inside of the building." The ANSTO's safety classification has not been applied to the ILSW 10.3 DGR crane.

### ***Radiation Protection***

ANSTO Waste Operations are part of a site-wide integrated management system used for all aspects of radiation protection to protect people and the environment from the harmful effects of radiation.

Radiation Protection Services, within ANSTO Nuclear Services, provide Health Physics Surveyors (HPS) and Radiation Protection Advisers (RPA) dedicated to ANSTO Waste Operations, also within Nuclear Services. ARPANSA inspectors are satisfied that workers accountable for radiation protection are suitably qualified and experienced and perform their duties for radiation protection to a high standard. They are generally located at the Waste Operations facilities, and interact directly with the Waste Operations staff. Staff members of Waste Operations stated that the communication and feedback mechanisms were open and transparent citing the communication with radiation protection personnel as an example. Further, the inspectors noted evidence of positive attitude towards raising safety issues and safety awareness. It was noted that any potential conflicts of interest, resulting from the

management structure of Nuclear Services, were recognised and managed through the reporting chain.

Every quarter the RPA produces a report, against Key Performance Indicators, which trends staff radiation exposure against targets, radiation events reported by ANSTO Waste Operations, and the number of HPS monitoring tasks and clearances undertaken. Routine radiological surveys are performed in relevant operational areas as needed and results of such surveys are maintained in an appropriate format. HPS provide monthly dose reports to the Waste Operations facility managers and then distributed to the operational units. Recent dosimetry results for Waste Operations were reviewed during the inspection. Doses to personnel were low and below the level to initiate an ALARA assessment.

Radiation protection procedures and equipment for normal operation and emergencies at Waste Operations are appropriate and equipment is maintained, serviced and calibrated by the ANSTO calibration service.

ARPANSA inspectors viewed video clips of ANSTO personnel discussing good radiation protection practices in project areas. The clips were prepared and as part of the rotating two-monthly ANSTO Safety Focus Programme (Dose Busters) addressing improvements in radiation safety. These videos are placed on the ANSTO intranet, readily accessible to, and popular with, personnel across the organisation. The inspectors identified this approach as a good practice.

A good practice was also identified in the five steps of the Nuclear Services Team Behaviour:

- Be prepared to have the tough conversations;
- Always keep ourselves and others accountable;
- Make the effort to clarify the explanation;
- Open honest and direct communication; and
- Share all information for the benefit of the team.

A process of controlling changes to plant, equipment and documentation is not robust in Waste Operations. It was noted that ANSTO Waste Operations relies on the high level, more generic ANSTO change control procedure, rather than one that is tailored to local needs. For example, it is not clear how the inputs from RPA are incorporated into changes at ANSTO Waste Operations that may have radiation protection ramification. ARPANSA inspectors consider that ANSTO Waste Operations should improve the change control process to systematically address changes undertaken at the local level.

### ***Event Protection***

Evidence was provided that ANSTO Waste Operations has considered and implemented controls to ensure the effects of external 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.

Systems such as standby and uninterruptable power supplies are in place to maintain safety functions in the event of failure of electrical and water services to the facilities. Services can be isolated when needed and production processes discontinued and made safe. Systems are designed to fail safe if services are lost.

Because of the age of many of the facilities, it is not clear whether seismic restraints are fitted to and maintained to vulnerable equipment whose failure could lead to unsafe conditions. However, this is not regarded as being significant because of the low hazards of the facilities and low likelihood of significant events. Facility modifications and new facilities meet established seismic requirements.

The inspectors observed that Waste Operations infrastructure is in generally good order and land management practices are implemented to reduce external safety hazards and security threats. Security Systems were maintained and operational. A building management checklist is completed annually to provide verification of the state of the facilities and their surrounds. However, as discussed above, it was observed during the inspection that some gutters of B59 were overflowing with leaf litter.

### **Findings**

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

### **Performance Deficiencies:**

1. As part of international best practice, items important for safety such as cranes should be categorised and documented within the ANSTO Waste Operation's SAR. ANSTO has not always identified dangerous goods rated cranes used in waste operations as items important to safety and documented crane failure in safety assessment of facilities.
2. Results of inspections, testing and maintenance of ANSTO assets are not presently captured in an effective and systematic way. Failure to do so makes it difficult for routine evaluation and analysis, which could facilitate ongoing understanding, learning and feedback for continuous improvement of safety and security performance within ANSTO.