



Inspection report

Licence Holder: Australian Nuclear Science and Technology Organisation (ANSTO)	Licence Number: F0243
Location inspected: Gamma Technology Research Irradiator (GATRI) facility, Lucas Heights	Date of inspection: 4 April 2017
	Report No: R17/03214
<p>An inspection was conducted as part of ARPANSA's baseline inspection program to assess compliance with the <i>Australian Radiation Protection and Nuclear Safety Act 1998</i> (the Act), the Australian Radiation Protection and Nuclear Safety Regulations 1999 (the Regulations), and conditions of Facility Licence F0243.</p> <p>The scope of the inspection included an assessment of the ANSTO Gamma Technology Research Irradiator (GATRI) facility's performance against the Performance Objectives and Criteria. The inspection consisted of a review of records, interviews, and physical inspection of the facility.</p> <p>Background</p> <p>ANSTO is authorised under section 32 of the Act to operate the GATRI facility. GATRI is used to treat items for medical, health, industry, agriculture and research purposes. The facility contains Co-60 sources which are stored in a water pool. Items to be irradiated are placed in a concrete room in which the radioactive source is raised out of the water storage pool. The facility also includes a Gammacell irradiator used to calibrate instrumentation.</p> <p>Observations</p> <p>In general, the management of radiation safety at the GATRI facility was found to be satisfactory. In some cases, however, there appeared to be room for improvement with respect to security plan documentation and the plans and arrangements for managing facility safety.</p> <p>Performance Reporting Verification</p> <p>Quarterly reports have been submitted to ARPANSA in a timely manner and contained relevant information and details of compliance with the Act and Regulations.</p> <p>The Safety Analysis Report (SAR) for GATRI is due to be reviewed by ANSTO in the near future. Safety categorisation at GATRI follows the system of categorisation described in ANSTO/T/TN/2008-11 - <i>Guidance on Safety Categorisation of Structures, Systems and Components</i>. The pool water is described in Table 2 on page 55 to the SAR as a level 3 safety category in Table 2. However, there are a number of active monitoring controls around the pool water level indicating that water level is important to safety. Inspectors are of the view that water level controls and active monitoring are commensurate with safety category 2. Review of the safety categorisation of the pool water level as described in the SAR is recommended as an area for improvement.</p>	

Configuration control

Since 2011, neither source acquisitions nor source disposals have occurred. The facility manager showed inspectors the source inventory spreadsheets for tracking and managing the current facility source inventory. These inventory spreadsheets also allow the current activity of the Co-60 held in the GATRI water pond to be calculated.

Where a change with potentially significant safety impact is made the significance of the change is assessed in accordance with ANSTO procedure for categorisation of a change AF-2388. ANSTO showed inspectors how AF-2388 was applied to the October 2016 interlock backup detector failure. Inspectors found that GATRI management are applying the ANSTO site wide change management process AF-2388 to manage configuration control at the facility.

Condition 2 to Schedule 2 to Facility Licence F0243 requires the licence holder to comply with applicable codes and standards. In particular, the licence holder must comply with RHS 24 *Code of Practice for the design and safe operation of non-medical irradiation facilities (1988)*. Section 8.2 of RHS 24 requires that the controls be designed such that a single multipurpose key is necessary to operate the irradiator during normal use and that this key is used to operate the control console, to gain access to the radiation room, and to actuate the safety delay timer. Access to the radiation room could still be achieved without removal of the key from the irradiation control console. The facility's access arrangements with respect to the multipurpose key do not meet the requirements of section 8.2 of RHS 24, which is a potential non-compliance with Condition 2 to Schedule 2 to Facility Licence F0243.

Inspection, testing and maintenance (ITM)

ITM at GATRI is managed and scheduled using a shared calendar which inspectors sighted during the inspection. Inspectors viewed the following maintenance records: Weekly Maintenance Records F-3619, Monthly Maintenance Records F-3620, Quarterly Maintenance Records F-3621 and Annual Maintenance Records F-3622. Inspectors were shown the weekly water sample test results and gamma surveys of the ion column. Gamma spectroscopic water analysis records were complete and indicated maintenance of the GATRI water quality has been performed at regular six monthly testing intervals.

Training

Training records are maintained digitally in the ANSTO site training system and in GATRI-specific training records. When a procedure is updated all staff are retrained on the updated procedure. The training spreadsheet was observed during the inspection.

A formal system for training evaluation is being developed and is due to be implemented in the near future. This system is proposed to include observation of staff in the field to ensure skills, knowledge and experiences are appropriate for the task being undertaken. This was seen as a positive measure.

Event protection and emergency preparedness

ANSTO business resilience plans and arrangements cover scenarios including loss of power or critical systems. These plans are required under the site security plan. The last version of the Business Impact Analysis AG-6222 17/3/2015 and Business Recovery Plan AG-5605 17/6/2015 were for a business group which has been restructured. Inspectors noted that revision of the Business Recovery Plan to accurately reflect current management is an area for improvement.

The GATRI Emergency Response Plan deals with all aspects of notification and response, incident escalation and emergency mitigation procedures, whilst effectively minimising doses to personnel. The most recent GATRI exercise was conducted on 27 March 2017. The exercise has been formally reported and a copy provided to ARPANSA inspectors. The report confirms compliance with paragraph 16.4.4 of RHS 24 which requires an annual exercise be undertaken. Evidence was also sighted of the previous exercise which was a fire scenario.

Security

Physical security arrangements including key and swipe access to building were confirmed during the inspection. Security exercises and annual security eLearning which GATRI staff complete are applied site-wide. The ANSTO Security Plan (AG-5534) requires facility plans to be approved by the ANSTO Agency Security Advisor (ASA). Inspectors noted that the GATRI security plan did not have ASA sign-off at the time of inspection; this was noted as an area for improvement.

Regulation 48 requires licence holders to comply with Radiation Protection Series No 11 (RPS 11) the *Code of Practice for the Security of Radioactive Sources (2007)*. Compliance with RPS 11 includes the preparation, regular review, and implementation of a security plan which has been endorsed by an approved person. During the inspection evidence could not be provided showing that the facility security plan (P5736) was endorsed by an accredited person as required in RPS 11. The facility security plan was not endorsed or approved in accordance with RPS 11, which is a potential non-compliance with Regulation 48.

Radiation protection

Thermo-Luminescent Dosimeter (TLD) badges and Electronic Personal Dosimeters (EPDs) are used to record personal doses of staff working at GATRI. Area monitors, EPDs and portable monitors were found to be well within calibration.

Dose records from TLD badges are maintained centrally and emailed to staff. Doses recorded at the facility were observed to be consistently in the low dose range. Staff indicated that unusual readings for EPDs or TLDs are investigated.

During the inspection, records of the health physics surveys were observed. The most recent surveys for GATRI and the Gammacell were conducted on 7/11/16 and 7/1/17 respectively.

A spreadsheet is used to determine which instruments are for due for calibration. A copy of the spreadsheet was provided and calibration of instruments in accordance with the schedule was confirmed. Calibration certificates are kept on site and physical copies were sighted.

Findings

The inspection revealed the following **potential non-compliances**:

1. The facility's access arrangements with respect to the multipurpose key do not meet the requirements of section 8.2 of RHS 24, which is a potential non-compliance with Condition 2 to Schedule 2 to Facility Licence F0243.
2. The facility security plan was not endorsed or approved in accordance with RPS 11, which is a potential non-compliance with Regulation 48.

The inspection revealed the following areas for improvement:

1. Safety categorisation of the water level in the GATRI pond should be reviewed in the next update of the SAR.
2. The GATRI security plan did not have ASA sign-off at the time of inspection.

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