



Inspection report

Licence holder: Australian Nuclear Science and Technology Organisation (ANSTO)	Licence number: F0240
Location inspected: Gamma Irradiation Suite, ANSTO, Lucas Heights	Date/s of inspection: 9 March 2020
	Report no: R20/02566

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 F0240.

The scope of the inspection included an assessment of Australian Nuclear Science and Technology Organisation (ANSTO)'s performance at the Gamma Irradiation Suite (GIS), against the Performance Objectives and Criteria (PO&C) with a focus on security and maintenance. The inspection consisted of a review of records, interviews, and physical inspection of the facility.

Background

The Licence holder is authorised under section 32 of the Act for the operation of a non-medical irradiator, the facility is also licensed to use small check sources.

The GIS is a general purpose irradiation facility for the gamma irradiation of samples for radiobiology research including low dose animal research. Following an incident involving a mechanical malfunction in 2017, the facility has been shut down and is intended to be decommissioned.

The facility is licensed to contain a Cobalt-60 source of up to 32.8TBq. The current source activity is approximately 4TBq. The source is housed in a Theratron teletherapy unit with integral shielding and is located in a shielded interlocked room. At the time of the inspection the source was not in operation.

The codes and standards applicable to this facility are those that appear in section 59 of the Regulations and licence conditions, including:

- Code of Practice for the Design and Safe Operation of Non-Medical Irradiation Facilities [1988] (RHS24)
- Code of Practice for the Security of Radioactive Sources [2019] (RPS11)

Observations

In general, the management of safety and security at the GIS facility was found to be sound. In some cases, however, there appeared to be room for improvement with respect to security arrangements and ensuring that actions which are appropriate to the current state of the facility are clearly documented and implemented.

Configuration management, and change control

The primary document which outlines the safety systems of the facility is the Safety Analysis Report (SAR). This includes a summary of risk assessments, control measures and potential emergency response associated with the facility.

The current configuration differs from that described in the risk assessments and operational procedures in that the facility is non-operational. While the fact that the facility is shutdown is highlighted in the documentation, a systematic analysis of which risk, controls, and procedures are needed to maintain safety and security was not evident. Instead most risks and controls from the operational state continue to be reflected in the documentation. This results in requirements for checks that may have limited benefit, or cannot be performed, sitting alongside relevant requirements. Without a formal assessment it is left to individuals to determine the applicability and safety and security implications in the current state. As described in the ARPANSA guidance [Possess or control of a controlled facility](#), a possess or control licence is intended for extended shutdowns, however the facility continues to be covered by an operating licence with a condition restricting operation. The transition was not previously made as the future of the facility was not certain and thus there was a desire to maintain flexibility. However, clear intent was now demonstrated during the inspection that the facility is awaiting decommissioning in the near to medium term, with no intention to use the facility for any other purposes.

ANSTO staff stated there was now an intention to transition to a possess or control licence ahead of the licence for decommissioning of the facility (at which stage the source would be disposed of). The previous inspection noted that the change process was not always applied in accordance with procedures and notification requirements. The assessments and documents required to obtain a possess or control licence should also ensure that the full implication of the changes are understood by all parties and appropriately documented.

Radiation protection, and security

A range of monitoring devices were in use including a wall mounted unit, a portable hand held unit, and an electronic personal dosimeter. Recent annual operator radiation doses remain very low, as would be expected. Due to the shutdown status of the facility there is no potential exposure related to operation of the source. Activities conducted in the irradiation room are largely related to maintenance, inspection and related checks.

Access to the irradiation room is effectively controlled through a key that is securely stored and managed by the GIS Facility Officer, who ensures adequate training and supervision of the staff.

A number of physical security measures were observed to be in place. However, as required under RPS 11, detection (and assessment) measures were not evident. Further, some administrative arrangements, including checks to confirm the presence of the source, scheduled reviews of access, and security awareness training / briefings were not evident. It is also a requirement under RPS 11 that the facility maintain a security plan that has been endorsed by an accredited assessor. A security plan has been submitted to ARPANSA for endorsement. However, final endorsement of the plan has not yet been provided by ARPANSA and the plan requires some further modifications. This is an area of potential non-compliance with a code required under section 59 of the Regulations.

Inspection testing and maintenance

Routine measurement, through annual radiation survey and wipe test, were carried out within the required timeframes. However, a number of other inspection and maintenance activities were not carried out. It was also observed that some checks required by procedures were not applicable, such as testing components that are now non-operable. However, other tests that are covered in the procedure

are still applicable as they relate to risks that are still present and could be performed. While the portable radiation monitors were calibrated the wall mounted monitor was not calibrated within the last year. Not following these requirements in plans and arrangements is a potential non-compliance.

A systematic analysis of which checks are applicable, and therefore should continue to be performed, would be required as part of a possess or control licence application.

Performance reporting and verification

It is a requirement of licence condition 2 that the licence holder comply with, and review their compliance, against the applicable codes and standards, in this case RHS24 and RPS11.

As found in the previous inspection, a comparison by ANSTO of RHS24 and the current status of the facility was not evident. While the SAR stated compliance with RHS24, in some instances the SAR described a configuration which was not in accordance with RHS24. A review of the applicable controls and compliance with the codes would be required as part of a transition to a possess or control licence.

The security plan has been submitted to ARPANSA for endorsement in line with the requirements of RPS 11, but has not yet been endorsed by ARPANSA. A detailed assessment of the adequacy of security measures was not performed as this will be addressed in the endorsement process.

Training, event protection, emergency preparedness and response

As there has been no operation of the facility there has been no new staff, training or events associated with operation or emergency response. The arrangements from operational use remain in place.

Safety Culture, human performance and performance management

Safety should be learning driven and supported by a questioning attitude. To enable this, accurate recording, actioning and trending of events is important. It allows learning to be facilitated through the ability to recognise and diagnose deviations, to formulate and implement solutions, and to monitor the effects of corrective actions in a timely manner to facilitate a cycle of continuous improvement.

The lack of operational use also results in few entries in registers such as quality registers, logs of maintenance activities, etc. However, some issues were observed with the record keeping of operational logs and events, including access logs. This is a potential area for improvement.

During a site visit ARPANSA staff observed an issue related to a locking mechanism on a door which forms part of the 'facility protective security measures' outlined in the security plan. This issue was observed to have been rectified at the time of inspection. The issue was resolved as a maintenance issue, which was appropriate. However, it did not appear in the event reporting system, the Governance Risk and Compliance (GRC) or other logs. The security plan noted that where a non-conformance is identified as part of an audit this will be formally documented and notified. Given this issue was not categorised as a security nor operational event, it may not feed into any future trending or analysis.

As outlined in IAEA Specific Safety Guide 50 (SSG-50) Operating Experience Feedback for Nuclear Installations, organisations should identify and feed into their operating experience program all issues such as events, potential problems relating to equipment and human performance, and safety and security related concerns.

Findings

The inspection revealed the following potential non-compliances:

- Some requirements of the Code of Practice for the Security of Radioactive Sources [2019] (RPS11), including an endorsed security plan and detection requirements, were not in place.
- Some requirements of the plans and arrangements were found not to be consistently followed.

The inspection revealed the following **areas for improvement**:

- The current licence authorises ANSTO to 'operate' the GIS, despite the shutdown nature of the facility. The change to a 'possess or control' licence with appropriately amended procedures and risk assessment would provide clarity of the risks and controls that are important for safety and security until decommissioning can be carried out.
- Recording of logs, events, and deviations could be improved. A review of the requirements and guidance on, and auditing of, event reporting may assist in ensuring a consistent and transparent approach is applied.

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

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