



Inspection report

Licence holder: Department of Home Affairs	Licence number: F0136
Location inspected: Brisbane Container Examination Facility	Date/s of inspection: 31 October 2019 and 7 November 2019
	Report no: R19/12402

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 F0136.

The scope of the inspection included an assessment of the Department of Home Affairs performance at the Brisbane Container Examination Facility (CEF) against the Performance Objectives and Criteria (POCs). The inspection consisted of a review of records, interviews, and physical inspection of the facility.

Background

The Australian Border Force (ABF), under the banner of the Department of Home Affairs (the Department), is authorised under section 31 of the Act for operation of a particle accelerator under multiple facility licences at different ports across the country. The purpose of these facilities is to aid in the prevention of illegal and harmful goods entering the country. Facility Licence F0136 authorises operations of a 6/9MeV linear accelerator at the Brisbane CEF to assist in examination of containerised sea cargo.

The main codes and standards applicable to this facility are those that appear in section 59 of the Regulations plus:

- Health Physics Society (HPS) Installations using non-medical x-ray and sealed gamma-ray sources energies up to 10MeV (ANSI/HPS N43.3-2008)
- Australian Standard Safety in Laboratories – Ionizing Radiations (1998), (AS 2243.4-1998)

Observations

The licence holder was found to be compliant with the Act, the Regulations, licence conditions and relevant standards. The assessment also concluded that the Brisbane CEF continues to reflect the principles of the POCs in its controls, behaviours and management system. Two areas for improvement (AFI) were identified relating to content of the current plans and arrangements.

AFIs from the previous inspection were discussed. All have had actions placed on them with one requiring further investigation. These are mentioned throughout the main text of the report.

Performance reporting verification

Quarterly reports since the last inspection in 2017 were examined by inspectors. Safety and security reporting continues to be satisfactory and complete as per Licence Condition 1 of F0136.

Events raised since 2017 were examined. Aside from a false dose-rate reading below the internal radiation safety limit (5 μ Sv/h) and identification of an issue surrounding safety lock sensors, which was resolved in a timely manner, no radiation safety incidents have occurred at the Brisbane CEF.

The Brisbane CEF has documented the route to take when reporting radiation safety incidents in their radiation safety management plan (RSMP). Staff will report radiation safety incidents up a hierarchical structure or chain of command in combination with an online incident register. The online system used to record an incident is mainly for WHS purposes and informs the WHS team in Canberra. Radiation safety incidents can be reported via this system. The information, however, will not be delivered directly to the Department's radiation safety management team and relies on the WHS team to triage the information. Offline records of incidents are also kept in the CEF's control centre.

Radiation safety matters continue to be included as a standing agenda item for Brisbane's regional management meetings. As part of this item, outcomes from other ARPANSA inspections are included to determine their applicability and share lessons learned.

Configuration management

A standard operating procedure (SOP) is employed at the CEF which is intended to provide clear instruction in the use of the container x-ray system (TI-1926). This procedure references the use of multiple keys which allow the operation of the x-ray. Whilst seeking clarification in regard to the management of these keys, discrepancies between the SOP and operator training arose. Staff are trained in the use of a single key yet the SOP refers to more than one. The site radiation safety officer (SRSO) clarified that they are in fact the same key and noted that this would be addressed in the next SOP update.

When the container x-ray is not required to be in use, all keys are kept secured in a safe and only authorised staff have access. When in use, the location and holder of the keys are documented on the Container X-Ray Safety Interlock Key Register (MB 1215) as an administrative control. Examples of this form were examined at the time of the inspection and no issues raised.

The last inspection of the CEF in 2017 identified an AFI around the application of the ANSI standard to the operation of the CEF. It is also a condition of licence that the licence holder comply with applicable codes and standards and conduct an assessment against these to ensure compliance. Recommendations from the Department's radiation safety advisor (RSA), following their annual radiation survey completed in April 2019, have been proposed to ensure that the operation of the CEF remains compliant with these codes. An example of one of these recommendations which has been implemented at the Brisbane CEF includes the increased duration of the audible warning signal from ten to twenty seconds to ensure minimum duration is always achieved, ensuring that all personnel are aware that a scan is about to commence.

Inspectors discussed the change management process employed at the CEFs, focusing on a modification in early 2019 to remove an invalid override mechanism for their shielded doors. This was identified to not meet the required design as the mechanism should have only been accessed by their service engineer. Neither the decision to change nor the documented process is made/kept locally at the CEF. The management of such decisions is Canberra-based. However, it was noted that local staff are consulted on radiation safety change control matters.

Inspection, testing and maintenance

Maintenance at the CEF is conducted by contracted staff from the original equipment manufacturer, Nuctech. Operators perform prestart checks and can troubleshoot faults, however, if the issue cannot be resolved by simple means (e.g. restarting a program, etc.) then this will be escalated to the service engineer. When a fault occurs it is registered locally, nationally (Canberra), and with the manufacturer.

The service engineers perform remedial, preventative and comprehensive maintenance. Comprehensive maintenance occurs quarterly and is relied on by the Department to inform them of the status of the machine, its safety features and dose rates in occupied areas. Remedial maintenance relates to breakdowns or faults and occurs as required. Preventative maintenance is categorised as weekly, monthly, quarterly and annual with each category having different requirements. Maintenance records from the past 12 months were reviewed as part of the inspection. No significant issues were raised, however, it was noted the preventative maintenance did not strictly adhere to the frequency outlined in the Nuctech maintenance management plan. Due to the nature of the arrangement with Nuctech, being a contracted service, the specific requirements for scheduling preventative maintenance was unknown at the local level. Having said this, it is still performed throughout the year. It was suggested that this be investigated to determine the requirement for the CEF.

Training

The training requirements for staff who are employed to operate the CEF are uniform across the ABF. The ABF make use of competency assessment training officers (CATO) who assess and monitor the training of staff at each CEF. Operators must complete the ABF's national x-ray radiation program and be recertified in the operation of radiation detection equipment in line with the ABF's requirements. Recertification programs are also in place for CATO's and for the operation of the container x-ray.

A learning management system (LMS) tracks each employee's certification. When training is completed, the CATO informs the training coordinator and the employee's records are updated to reflect this. The LMS allows the CATO to see whose certification has lapsed and commence the recertification process.

The previous inspection in 2017 identified the certification of the CEF engineer qualifications and competency as an AFI due to the engineer having not undergone this certification. In years past an arrangement was in place in which the RSA certified the Nuctech engineer to install, operate and service the linear accelerator. While this arrangement no longer appears to be in effect, the engineer in place at Brisbane did possess a NSW EPA radiation user licence for linear accelerators which would require some form of verification of qualification and competency to possess. In discussion with the Canberra-based radiation management team following the inspection, they have placed an action on themselves to clarify the current arrangement for their contracted Nuctech staff regarding whether RSA certification is considered necessary in the future.

Event protection

Given the nature of the site and the facility, there are no situations which would give rise to an event with radiological consequences. Pest control arrangements are physically evident and a fire detection system is in place which is maintained by an external contractor on a monthly basis.

Security

The physical security arrangements at the facilities were found to remain appropriate.

Inspectors were supplied with the latest iteration of the security plan for the Brisbane CEF. In discussion with the RSO, some elements of the security plan did not align with ARPANSA regulatory guidance

material (Plans and Arrangements for Managing Safety). For example, the plan does not currently cover lines of responsibility and authority for decision making in matters of security for a controlled facility. The latest revision was also found to not completely reflect the physical security arrangements in place. This is an area for improvement.

Radiation protection

As previously mentioned, the RSA had put forth recommendations to ensure compliance with codes and standards. These recommendations included the update of signage at the CEF, in accordance with the ANSI standard, which has been a long standing AFI from previous inspections. While only an administrative control, the correct signage gives the viewer an appropriate understanding of the risk from the hazard contained within the facility and allows them to act and respond accordingly.

The current radiation safety management plan (RSMP), which is uniform across all the CEFs, has fallen outside of its internal review period. The Canberra-based radiation management team have been tracking the AFIs relating to the review and update of the RSMP and are currently in the process of drafting its next iteration.

Emergency preparedness & response

Department of Home Affairs engage an external contractor (PRESNA) to develop their emergency plan and coordinate their emergency response training activities. As part of the induction program, all employees are familiarised with that plan. It contains an emergency manual that outlines procedures for emergency events which have been identified with potential to give rise to emergency situations. It also defines the responsibilities and requirements of those directly involved with the coordination and safety of staff in the event an emergency takes place.

The Brisbane CEF conducts fire evacuation drills monthly and bomb threat evacuations annually.

Unlike the emergency plans developed by PRESNA for the other CEFs, even though the same emergency events have been identified, more than half of the identified scenarios have no response procedures including but not limited to a radiological incident. The omission of this content is also not in line with ARPANSA's regulatory guidance material (Plans and Arrangements for Managing Safety). This is identified as an area for improvement.

Findings

The licence holder was found to be in compliance with the requirements of the Act, the Regulations, and licence conditions.

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

1. Update the security plan whilst employing a graded approach.
2. Update the emergency plan to include response plans for all identified scenarios.

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

No written response to this report is required
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