



Inspection report

Licence holder: Department of Home Affairs	Licence number: F0125
Location inspected: Sydney Container Examination Facility, NSW.	Date/s of inspection: 29 May 2018
	Report no: R18/07442

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 1999 (the Regulations), and conditions of Facility Licence F0125.

The scope of the inspection included an assessment of Department of Home Affairs’ performance at the Sydney Container Examination Facility (CEF) against ARPANSA’s Performance Objectives and Criteria (PO&Cs). The inspection consisted of a review of records, interviews, and physical inspection of the facility.

Background

In December 2017, the Department of Home Affairs, formerly the Department of Immigration and Border Protection (DIBP), was established. This brought together a range of federal functions within Australia, with the Australian Border Force (ABF) being amongst them, who aim to prevent the entry of illegal and harmful goods into the country. The Sydney CEF, controlled by the ABF, is used as part of that prevention in the examination of containerised sea cargo.

The main codes and standards applicable to this facility, additional to the codes that appear in Regulation 48, are:

- 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))

The aforementioned ANSI/HPS standard has been recently implemented as one of the applicable standards on which all ABF controlled CEF compliance will be assessed, and replaces Radiation Health Series No.24, which had previously been applied.

Observations

Performance Reporting and Verification

The Sydney CEF has continued its quarterly reporting in a timely manner and at the time of inspection there were no radiation incidents to report. The January – March 2018 quarterly report to ARPANSA highlights incorrect reports for the latter two periods of the previous calendar year relating to a self-

identified potential “low risk non-compliance”. This matter is in relation to an ARPANSA approved regulation 53 disposal of parts which were removed from the accelerator unit as part of the upgrade project to allow for a higher dual energy system (from 6/3 MeV to 9/6 MeV). This upgrade took place at Sydney, Melbourne and Brisbane CEFs.

This issue has been resolved as not being a non-compliance matter.

Configuration Management

Inspectors questioned CEF staff regarding the incorrectly reported regulation 53 disposal. The components were meant to be transported to the Original Equipment Manufacturer (OEM) office in Sydney, and would then be removed completely back to the OEM in China.

Communication breakdown between the OEM and Home Affairs saw the parts remain in crates within the scanning hall for a period of approximately 20 months. This was exacerbated by an organisational assumption that the components had been removed based on being invoiced by the OEM for the disposal with the subsequent payment made by Home Affairs. This is what led to the aforementioned incorrect reporting.

After being more informed of the disposal, it was evident that change control processes within the CEF were absent. No procedures or other documentation were supplied which could show evidence that a change control procedure is in place. Not having this in place directly resulted in the accelerator parts not being transferred and accepted as being unknown but required parts inside an OEM crate which needed to be kept within the scanning hall.

Also, the current Radiation Safety Management Plan (RSMP) is in a state of flux. Inspectors were supplied with both a current and working draft form of the RSMP but were able to find no discernible differences between the two. Essentially, both documents are identical. However internal confusion has been introduced by the insertion of two different document numbers, and incorrect approval and review dates on the current documentation due to formatting issues. This new document is one of many which has been caught up in the ongoing transition from DIBP to Home Affairs and has seen the complete removal of the change control process contained in previous iterations. This lack of change control has also seen the merging of two RSMPs, resulting in a radiation protection issue concerning change control.

Inspection, Testing and Maintenance

Maintenance at the Sydney CEF is performed by the OEM Nuotech Sydney Pty Ltd (Nuotech). Nuotech have trained engineers from their parent branch in China located at each CEF to be the sole responsible authority for maintenance on the CEF. The engineers conform to a quarterly and annual maintenance schedule and generate a report detailing what maintenance functions were performed and the results of those functions.

Operators conduct daily non-technical inspections within the accelerator unit and also perform calibration of the equipment. These are carried out at the start of this first shift and on handover to the afternoon shift. If an image artefact is found at the completion of a scan, as determined by analysis staff, operators will complete another calibration followed by a secondary scan.

Training

Staff are mainly comprised of ABF personnel and a singular Nuotech engineer. Inspectors were supplied with multiple certificates of verification issued by the ABF's contracted radiation protection advisor for NuTech engineers associated with the Sydney CEF however apart from identifying the current engineer, the other staff who work or have worked within the facility could not be readily identified. This was found to be even more evident when staff appearing in maintenance reports could not be accounted for.

No information regarding the radiation safety training of the OEM engineers could be provided.

In terms of the operators, those involved with the CEF must complete specific training modules as part of the National X-ray Education Program (NXEP). These modules include radiation safety and X-ray awareness and specific modules related to container X-ray operation and image analysis. Whilst the specific modules require recertification over a defined period of time, radiation safety training is only ever completed once. A Learning Management System (LMS) has also been incorporated within the CEFS which keeps records of staff training and sends reminders for completion of training to both staff and their supervisors.

Training incorporates both classroom based learning and on-the-job training with a certified operator/trainer. If the requirements of the training are not met, staff may be removed from the facility or informed they cannot be stationed within the CEF altogether until such time as those requirements have been satisfied.

Event Protection

From the physical inspection, inspectors could see no evidence that event protection had not been considered.

Security

During the inspection, inspectors were provided with a site security plan for the Sydney CEF. This document appears to resemble an assessment of what the site does or does not have as opposed to an actual plan. Having said this, security measures surrounding the facility are deemed to be adequate for the level of risk associated with the hazard.

Procedures have also been developed for traffic management which highlight the different mechanisms for access to both security cleared and non-security cleared vehicles.

Radiation Protection

As previously mentioned, a radiation protection issue has been created as a result of the lack of change control. Two RSMPs, one for the CEFs and the other for deployable x-ray equipment, were merged together to create a singular RSMP. The merge of these documents is not the issue. Rather that the merge has led to the CEF no longer being highlighted within the RSMP with exception of the mention of approved exclusion zones. The current RSMP has also been put in place after the introduction of the new ANSI/HPS standard. There has been no analysis of the standard to determine the adequacy of the RSMP.

The detection of radioactive material is also discussed within the document. There is an expectation that staff be able to monitor personnel who may become contaminated by said material in the event of a leaking package. However, staff within the facility do not have the training or the capacity to do so.

Within the scanning hall itself, there are a series emergency stop mechanisms in place: multiple push buttons and two pull cords running along either side of the length of the facility. These facilitate a shutdown function in the event that someone finds themselves inside the facility during an exposure. Large lengths of these pull cords were blocked off by crates and other stored items, which should not be present within the facility, leading to a potential increase in the likelihood of an exposure should someone be present during a scan, and also poses a potential obstruction hazard in the event of emergency evacuation of the scanning hall.

Emergency Preparedness and Response

An emergency plan has been developed by an external consultancy provider, PRESNA. It covers a range of scenarios as well as the primary responsibilities, requirements and selection criteria for those directly involved with the coordination and safety of staff in the event an emergency takes places. The plan is deemed to be adequate.

The CEF keeps a wardens register which lists contact information, warden position as well as when each staff member had last received their training. In terms of training, PRESNA conduct mock scenarios which are cycled annually ensuring that the same scenario is never tested in succession. Monthly tests are also carried out, by ABF staff, on the emergency intercom system as a means of verification of its operability.

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. The application of change management to physical structures, systems and components.
2. Physical obstruction of emergency shutdown mechanisms.
3. The application of change control in documentation.
4. Analysis of the ANSI/HPS standard and its application in the development of the RSMP.

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

No written response to this report is required

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