Inspection report

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| **Licence holder:** Department of Home Affairs | **Licence number:** F0155 |
| Location inspected: Fremantle Container Examination Facility, WA | **Date/s of inspection:** 27 June 2019 |
| **Report no:** R19/07657 |
| 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 F0155. The scope of the inspection included an assessment of Department of Home Affairs’ performance at the Fremantle 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. BackgroundThe Department of Home Affairs (DHA) was established in December 2017 with the aim of centralising a number of border agencies. This included the Department of Immigration and Border Protection, and the Australian Border Force (ABF).The ABF manages the Fremantle CEF and as part of their inspection processes, examines containerised sea cargo via the use of X-rays produced by a linear accelerator (linac).The main codes and standards applicable to this facility, additional to the codes that appear in section 59 of the Regulations, are: * Health Physics Society (HPS) *Installations using non-medical X-ray and sealed gamma-ray sources, energies up to 10 MeV* (ANSI/HPS N43.3-2008)
* Australian Standard: *Safety in laboratories Part 4: Ionizing radiations* (2018), (AS 2243.4-2018))

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. ObservationsPerformance reporting and verificationThere are two streams of reporting in place at the CEF. DHA employs a system whereby local level reporting informs the higher level teams that sit in Canberra (a national team exists for maintenance, a radiation safety management group for radiation safety, etc.). In addition, offline reporting methods are employed locally by incorporating the use of a simple spreadsheet and a diary which act as another repository for capturing information. In terms of reporting to ARPANSA, the Departmental Radiation Safety Officer (DRSO), who resides in Canberra, will disseminate an alert to the local Radiation Safety Officer (RSO) as a reminder to ensure they are meeting their quarterly regulatory requirements.Configuration managementThe CEF is operated via the use of a controlled key. This key is allocated to a specific team member who has been assigned certain duties for the day and that team member alone has responsibility for its management while conducting container examinations. On change of shift, a briefing occurs with duties and key management responsibilities handed over to the on-coming staff member. When not in use, these keys remain locked in a safe which only CEF staff have access to.Staffing requirements are also in force before a scan can be conducted. To ensure safety, the use of the CEF will only be allowed if a minimum of three staff are present.Change management at the CEF is not a defined process and is implemented through a Canberra-based project management team with limited involvement in this process at the local level.An example of a recent change was an aesthetic/ergonomic upgrade to the operations console. This change impacted the operation of warning lights at the CEF and as such, the Radiation Safety Advisor (RSA) was contacted to provide advice on whether or not they could safely continue. While the lights were not in proper working order, the safety function was still in operation and thus they were given permission to commence scanning. This example highlights the importance of a post-implementation review following a change. While safety functions were not impeded in this case, ill-conceived changes have the potential to generate negative consequences. Inspection, testing and maintenanceOperators at the CEF have Standard Operating Procedures (SOPs) which detail the process for start-up checks. Linac calibration is performed prior to initial use and when experiencing distorted images. If problems were to still occur, these are referred to the Competency Assessment Training Officer (CATO) as they generally have a further understanding of the operations of the linac compared to a normal operator. If simple troubleshooting fails, the original equipment manufacturer engineer from Nuctech will proceed with further investigation. Neither an operator nor CATO will physically attempt to maintain or repair the linac as this is the sole responsibility of the Nuctech engineer. An x-ray faults/service register is in place to capture all maintenance, repairs and damage to the CEF. If repairs could not be rectified, operators would cease all use of the CEF until the problem had been solved. The national team in Canberra schedules all Nuctech maintenance and receives direct reports from their engineers.Training The ABF makes use of CATO’s and an electronic learning management system (LMS). The LMS alerts staff and their supervisor as to the current status of their training and whether recertification is required. An offline spreadsheet/matrix is also physically displayed and updated in the CEF control building. Initial radiation safety training is only completed by operators once as part of the National X-ray Education Program (NXEP) however training in the use of their radiation detection equipment is scheduled to require a 2-yearly refresher. This may be extended by a period of 3 months at which point the operator may no longer use that equipment if the training has not been completed.Operators must also undergo recertification every two years in order to maintain their accreditation to conduct container examinations using the linac. If this accreditation is not maintained, staff must complete supervised on-the-job training until they have been deemed to be competent. Event protectionFrom the physical inspection, apart from the implementation of pest control, no credible external events could be identified which required radiation protection arrangements.Radiation protectionWhile the CEF utilises the generation of X-rays from a linac, the operators are not considered to be occupationally exposed workers, therefore, are not required to wear any form of dosimetry. The Nuctech engineer who maintains the CEF does have his own dosimetry, however, he is also employed to maintain other equipment outside of the Department of Home Affairs and sends his dosimeter overseas for review. His dose records are not held by the Department.Dose rate surveys are completed by the Nuctech engineers each quarter and these were supplied to inspectors. Images of the engineers completing the survey are attached to the quarterly reports, with multiple images showing the same location being surveyed by different engineers. These images highlighted the lack of consistency in performing the surveys as the location in the image was being surveyed at two different distances but recorded as being identical. While the dose was still quite low (in the order of a few microsieverts) these images speak to the reproducibility of the survey as the Department of Home Affairs relies on the information within these reports.The CEFs also have a Radiation Safety Management Plan (RSMP) in place as their main document which demonstrates how they will manage the safety of the facility. The RSMP, in line with the Department’s internal requirement, is meant to be reviewed and updated annually by the team in Canberra. The same suite of documents is in place at all the CEFs. Inspectors referred to a newer rebranded set of documents that were supplied as a result of the Sydney inspection in April 2018. Staff at Fremantle were not aware of these documents. The RSMP in effect at Fremantle had not been reviewed and updated since 2017.Due to the annual review and update of the RSMP not being undertaken, previously identified inaccurate information has remained. As identified in the Sydney inspection in April 2018, there is an expectation that staff be able to use contamination monitoring equipment in an instance where a leaking package has been identified. Staff are not trained in the use of this equipment nor do they have it available to them.Post-inspection of the Fremantle CEF in 2017, there were exchanges between the Department, SGS (as the Department’s Radiation Safety Advisor) and ARPANSA in regard to incorporating the appropriate signage in line with the ANSI/HPS standard. While signage is only an administrative control, the agreed signage, in-line with the standard and based on dose calculations, has yet to be put in place.SecurityDuring the course of the inspection, inspectors were supplied with a security document which highlighted how to enter/exit the premises and how alarms are monitored but was not a security plan in terms of ARPANSA’s Plans and Arrangements guidance. However, the identified security measures at the facility are deemed to be adequate for the level of risk associated with the hazard.Emergency preparedness and responseAn emergency plan has been developed by an external provider PRENSA. 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.Emergency exercises are conducted at least annually but generally occur every six months. These test full evacuations in relation to different emergency scenarios. This training is conducted by PRENSA and is coordinated through the Department’s national WHS team in Canberra. FindingsThe 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. Review and update of the RSMP
2. Update of signage to align with the ANSI/HPS standard

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

*No written response to this report is required*This report will be published on the ARPANSA website