



Inspection report

Licence Holder: Department of Defence and Australian Defence Force (Defence)	Licence Number: S0042
Location of source(s): A Defence Base in the Northern Territory	Date/s of inspection: 17 May – 23 June 2017
	Report No: R17/06679

An inspection was conducted as part of ARPANSA’s baseline inspection program. For the purposes of this inspection, the inspector did not enter the licence holder’s premises; instead the inspection was conducted using documents, photographs, and records sent by the licence holder, and further clarification via phone or email as necessary.

The purpose of the inspection was 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 Source Licence S0042.

The scope of the inspection included an assessment of Defence’s performance against the Source Performance Objectives and Criteria.

Background

Defence is licensed under section 33 of the Act to deal with sealed sources for calibration purposes of activity of 40 MBq or less. These sources are used to check the performance of radiation monitoring equipment. In this instance, the radiation monitoring equipment is used to establish a radiation safety boundary whilst performing industrial radiography.

Observations

Configuration Control

The Unit holds one caesium-137 (Cs-137) source. When manufactured in 1988, it contained 333 kBq of radioactivity. The source type and serial number correspond to the information contained in the Defence inventory of sources. Several stocktakes have been performed over the years to confirm that the source is still held by the Unit.

Inspection, testing and maintenance

In accordance with Section 6.6.4 of the Australian Standard *Safety In Laboratories: Part 4 Ionising Radiation* (AS2243.4), published in 1998, the sealed source should be wipe tested on an annual basis. However, Defence were unable to provide evidence that wipe tests have been performed.

Training

The staff who use this source are trained in industrial radiography. This includes accreditation to level II in Non-Destructive Testing. Certificates were provided to demonstrate this accreditation. Although there is an appointed Defence Ionising Radiation Protection Officer/Defence Ionising Radiation Protection Officer

(X-ray) (DIRPO/DIRPX), they were unable to provide evidence of their training. This was because they were away on deployment. However, their supervisor/commander was unable to provide evidence of their competency in their absence.

Radiation Protection

The Defence personnel using this check source do so in accordance with the manufacturer's instructions. This provides details of how a survey meter is expected to respond when adjacent to the source. However, there is no documentation which specifically describes how the Unit will safely manage the source. Given the abovementioned inadequacies, it is evident that an adequate assessment of the effectiveness of the system of protection has not occurred either. This is an issue that is widespread throughout the Defence organisation and it is understood that efforts are underway to rectify this.

The source is held in a yellow storage pot which is marked with a radiation trefoil. This pot is stored in a metal box. This box is not marked with a trefoil, the date at which the specified amount of radioactivity was accurate, or details of the responsible officer. However, the box appears to be of durable construction, reasonably fire resistant and elevated up off the ground, which would minimise the risk that the source would be affected by flooding. Radiation surveys of the source in its storage location are not routinely performed and documented. Furthermore, no evidence could be provided to show that the survey meter(s) held by the Unit had been calibrated in a manner which is traceable to a national standard.

Security

Defence uses the standard security arrangements to secure the source. These have been defined at the corporate level. However, this does not specify any requirements for securing low hazard sources. For example, due to an absence of documentation, there were no records of where the source was held, the arrangements for storage, frequency for confirming the continued presence of the source, and for accessing the source. In this instance, the source was stored within a container that was secured by a key operated padlock. However, the padlock was unlocked with the key inside.

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. Conducting wipe tests, performing radiation surveys and ensuring radiation survey meters are calibrated.
2. Provision for supervisors/commanders to have oversight of the training records of their staff.
3. Preparation of local documentation describing the management of the source.
4. Review of the storage and security arrangements of the source.

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