INSPECTION REPORT

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| **Licence Holder**: Department of Defence and Australian Defence Force (Defence) | **Licence Number:** F0213 |
| **Location inspected:** Defence base in South Australia | **Date/s of inspection:** 28 March - 7 April 2017 |
| **Report No:** R17/03879 |
| 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 F0213.  The scope of the inspection included an assessment of Defence’s performance in the following areas:   * Performance reporting and verification; * Configuration management; * Event protection; * Radiation protection.   The inspection consisted of a review of records, interviews, and physical inspection of the facility. Background The facility houses legacy waste made up of unrepairable and obsolete equipment, instruments, repair parts and consumables containing low and intermediate level radioactive materials. The facility is closed and does not receive waste on a regular basis. Defence possess and control the facility in order to manage the waste produced by previous activities.  Defence has been reviewing their arrangements for managing the radioactive waste and examining how waste may be managed into the future. This has included the development of a variety of strategies to accommodate possible changes in the Australian Government’s approach to radioactive waste management. One element of this strategic approach is the internal reallocation of responsibilities. It is expected that, in the near future, one group will manage all radioactive waste within Defence. ObservationsPerformance reporting and verification The RSO performs a quarterly review of the facility. A checklist is used to record the actions undertaken during these reviews. These activities include performing random checks to confirm that security devices are working correctly, observing any damage to the building or repairs that may be needed, through to inspections for cleanliness. This also includes counting the number of waste containers within the facility and taking dose rate measurements adjacent to a number of drums to confirm the radiation levels have not substantially changed. However, there is no map showing the location of each of the waste containers within the facility. Furthermore, while the RSO knows the areas of the facility that have elevated ambient dose rates these have not been mapped for others who may enter the facility. This indicates inadequacies in the development of documentation. Configuration management Defence maintains this facility as an interim measure to manage radioactive waste until such time as a national waste facility is established. A building assessor routinely visits the facility and assesses whether the building is in need of any repairs. Photographic evidence is taken when any building works are performed or new systems installed. However, there is no systematic program to record the state of the building, and the waste containers within, over time.  The facility is surrounded by a fence. It was observed that since the last ARPANSA inspection, animal(s) have increasingly accessed this area and a kangaroo was actually within the compound at the time of the inspection. It is presumed that access to this area has been gained via a gap in the fence line that has developed due to erosion of the adjacent ground. It appears that the animal(s) are seeking comfort in the shade cast by the building. Although, animal droppings have washed under a metal roller door, there was no evidence to indicate that animals (either native or feral) have accessed the building itself. The checklist detailing the quarterly review of the facility does not require an assessment of evidence of animal entry into the facility or an assessment of possible avenues by which animals may enter the facility. This indicates inadequacies in the maintenance and operational oversight program used to confirm that safety margins are not degraded. Radiation protection Site access instructions describe the procedures and necessary arrangements (i.e. PPE) for accessing the store. This requires a building entry register be kept in order to record who has accessed the facility, and if possible, an estimate of the dose incurred while they were in the facility. The records of entry were reviewed. The doses recorded were significantly less than both the limits and the generic actions levels set by Defence for investigation into elevated doses. However, a prospective assessment of doses that are expected to be incurred at the facility over the course of a year had not been developed nor had a dose constraint to facilitate decision making been established. This indicates inadequacies in the planning associated with the management of the facility.  A safety analysis report (SAR) was prepared prior to the establishment of the facility. This was based on the framework established by the IAEA safety guides in existence at the time. Both of these documents have since been superseded and the SAR has not been updated. The SAR analysed a variety of external events that may impact on the safety of the facility. This analysis demonstrated that the facility could be operated in an acceptably safe manner. However, the personnel responsible for the facility no longer have knowledge of the operations at the base external to the facility. Therefore, they do not have access to the data that describes the potential initiating events that may challenge the analysis.  The site access instructions for the facility stipulate the necessary PPE requirements needed for access into the facility. On completion of work at the facility, this PPE is removed and placed into a dedicated drum near the doorway. Defence intends to screen this used PPE and if it is found to be below a certain level of contamination, dispose of the material in accordance with standard procedures for the base. This has not happened to date. The criterion used for establishing whether disposal of the used PPE can occur has been based on the radiological properties of thorium contained in guidance published by the European Commission. Thorium is not, however, the most common isotope within the store and the value used is based on bulk quantities of material such as would stem from demolition of a building.  The site access instruction indicates that doses to personnel entering the facility should be monitored. Electronic personal dosimeters (EPD) are available to do this although the instruction does not provide any guidance on suitable levels for dose and dose rate alarms to be set on the EPDs. The instruction requires that a background radiation level survey is performed prior to entering the facility but does not provide any guidance on the radiation survey meter that should be used to perform these measurements or the expected dose rates.  As a condition of its licence, Defence is required to comply with the relevant sections of Australian Standard AS2243.4-1998 *Safety in laboratories Part 4: Ionizing radiations* (the Standard) for the radioactive waste storage facility. Clause 9.2 of the Standard requires that monitoring instruments be calibrated at annual intervals, however, the survey meter used by the RSO on the day of the inspection had not been calibrated within the last year. A second survey meter that had been calibrated within the last 12 months was located on the base but was not readily accessible. Findings The inspection revealed the following potential non-compliance:  A radiation survey meter had not been calibrated within the last 12 months in accordance with the Australian Standard *Safety In Laboratories Part 4: Ionizing Radiations* (AS 2243:1998).  The inspection also revealed the following Areas For Improvement (AFI):  AFI1 – Documentation   * The location of waste containers within the facility and the ambient dose rates around them is not adequately documented. * The SAR has not been reviewed and updated. * No internal guidance is available for use of EPDs and radiation survey meters at the facility.   AFI2 – Configuration Management   * There is no systematic program to monitor the state of the building and the waste containers within. * There is no routine review of the facility for evidence of animal intrusion into the compound.   AFI3 – Radiation Protection   * There is no prospective assessment of operational doses or dose constraints established. * The procedure for clearance of used PPE is out of date and needs to be reviewed.   It is expected that improvement actions be taken in a timely manner. | |

*In response to any potential non-compliance, the licence holder must carry out its responsibilities under Regulation 45*

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