Inspection report

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| **Licence Holder**: CSIRO Digital, National Facilities and Collections (DNF&C) | **Licence Number:**  S0216 |
| **Location inspected:** Canberra Deep Space Communications Complex (CDSCC)Tidbinbilla, ACT  | **Date/s of inspection:** 21 June 2017 **Report No:** R17/07937  |
| 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 the Source Licence S0216. The scope of the inspection included an assessment of R17/07937 ’s performance at the CDSCC against the ARPANSA Source Performance Objectives and Criteria (PO&C). The inspection consisted of a review of records, interviews, and physical inspection of sources. BackgroundCSIRO CDSCC is authorised under section 33 of the Act to deal with controlled apparatus.CDSCC is a Deep Space Network station currently operating five antennas (a 70-metre and four 34-metre radio dishes) that receive data, and transmit commands to spacecraft on deep space missions. The complex is also involved in radio astronomy research.CSIRO manages the CDSCC on behalf of the Australian Government under a US-Australian Space Tracking Agreement. NASA's Jet Propulsion Laboratory in California coordinates the site’s deep space communications activities. CDSCC forms part of the CSIRO Business of Astronomy and Space Science (CASS), which resides within the CSIRO DNF&C Business Unit. This inspection focussed on UV sources used in water purifiers, magnetic field testing apparatus and klystron amplifiers for deep space communications. ObservationsIn general, the management of safety systems and training at CDSCC is satisfactory. In a particular case, however, there appeared to be room for improvement with respect to the safety management structure which was inconsistent with the CASS Radiation Protection Plan (RPP) Version 2 (June 2017). There is currently no site Radiation Safety Officer (site RSO). Radiation ProtectionSource licence S0216 covers multiple discrete businesses within the DNF&C portfolio. RPP Section 2.4 states the Executive Director of DNF&C is the Licence Nominee for CSIRO Licence S0216 under the delegation of the Chief Executive. However, Section 2.4.2 identified the CASS Director (Business Unit Leader) is responsible for overall radiation safety within CASS, including the CDSCC site. The CASS Director is to ensure the effective implementation of the RPP and provide sufficient resources for its implementation in the business unit including appointment and allocation of trained and experienced staff to fulfil the BU RSO and Site RSO roles.DNF&C management has demonstrated a commitment to radiation protection through the development of a new comprehensive RPP (June 2017) to achieve best practice and maintain compliance with radiation legislation and ARPANSA licence conditions. However, there are inconsistences in the implementation of the safety management structure at CDSCC and the following of the regulatory compliance guidance provided in the RPP.The RPP outlines the systems and process to ensure compliance with regulatory requirements, and applies to all activities associated with operations at CASS sites, including CDSCC. The RPP clearly identifies the positions of a Business Unit Radiation Safety Officer (BURSO) and a Site RSO as having related but separate roles and responsibilities. The BURSO coordinates radiation safety within a Business Unit and ensures radiation licence and safety obligations be met; including maintaining the currency of the RPP. The RPP states a Site RSO has a number of responsibilities, one being to assist in radiation safety matters associated with the purchase and disposal, and reporting of controlled apparatus and material.In a specific case, this gap in CDSCC’s radiation safety management structure due to the absence of a CDSCC Site RSO may have directly contributed to CSIRO’s failure to comply with an ARPANSA requirement to seek prior approval to dispose of a controlled apparatus using the appropriate disposal request form. Performance reporting verification CDSCC’s quarterly reports have been submitted to ARPANSA in a timely manner and contain relevant information including details of compliance with the Act and Regulations. However, a disposal that occurred on 1 May 2017, to be reported in the following quarterly report, was not authorised. On 20 June, the day prior to the inspection, the BURSO notified ARPANSA inspectors by email at 5:30 pm of the discovery of the disposal of two Hallet 30 UV water treatment units by a contractor and acknowledged that the disposal of these controlled apparatus occurred without prior approval as required under Regulation 53. Regulation 53(1) stipulates that the licence holder may only dispose of a controlled apparatus with the approval of the CEO of ARPANSA. Section 2.4.8 of the RPP requires all staff and affiliates to comply with the RPP and the ARPANSA Licence Conditions including to ensure that controlled apparatus is not disposed ‘*without the prior approval of ARPANSA –this must be discussed with the site RSO and /or BURSO beforehand*.’ The Site RSO position for CDSCC is vacant. Other staff received radiation safety training; however, regulatory reporting responsibilities were not clarified. For example: While the HSE currently would bring radiation safety matters to the attention of the BURSO, the HSE was unclear on whether his official role extends to regulatory matters. The absence of a Site RSO at CDSCC is inconsistent with the RSO line management structure set out in the RPP. This augmented structure is likely to introduce regulatory compliance risks and uncertainty in local CDSCC site regulatory notification responsibilities, as RPP Section 5.2 states all staff wishing to dispose of radiation sources must discuss this with their line manager and seek advice from the BURSO. The RPP clearly requires ‘*the BURSO to notify and be granted approval by ARPANSA prior to the disposal using the Request Form’*. CSIRO’s RRP Section 4.18 addresses Change Management. The RPP acknowledges that ‘*managing change is an important part of maintaining safety and compliance.*’ Staff and affiliates are to consult on any changes with the Site/BURSO and Radiation Assurance on requirements to ensure safe operation and radiation protection. TrainingAlthough a radiofrequency radiation safety course training is provided for all staff, an external agency the Jet Propulsion Laboratory (JPL) provides specific on-site safety training for new technicians; this is not captured in the training records. Physical InspectionDuring the inspection of the controlled apparatus and material, CDSCC appeared to be in compliance with Australian Standard AS2243.5:2004 *Safety in laboratories Part 5: Non-ionizing radiations-Electromagnetic, sound and ultrasound.* Section 2.4.7 of the RPP requires managers ensure that Safe Work Instructions (SWI) are developed, approved by the Site RSO and Local HSE adviser; and are followed by a staff and affiliates. However, no SWI exist for the Klystrons. Currently, CDSCC relies in the expertise of the overseas affiliate (JPL’s trained staff). During the inspection, CDSCC advised it considered the development of SWI unnecessary, as JPL has its own operations manual followed by its staff. ARPANSA expects the SWI developed by CDSCC to formally capture these arrangements in order to ensure CSIRO staff are directed to the appropriate external manual used by JPL. In Section 3.3 of the RPP it is a requirement that ‘*SWIs be prominently displayed in proximity to the relevant item’*. However, SWI was not sighted adjacent to all controlled apparatus. In particular, magnetic particle test equipment and water purifiers (CSIRO No’s: 1736 and 1737). In addition, SWIs sighted with new UV water sterilisation apparatus (CSIRO No’s: 3954, 3955 and 3956) were not signed by authorised staff to acknowledge they have understood the instructions and will comply with them. ***Security***CDSCC Site is one of three NASA earth stations for deep space communication. NASA conduct security audits of the site with the involvement of CSIRO Security and Fraud. This collaborative arrangement ensures the site’s physical protection meets NASA’s international security standard for similar facilities overseas and incorporates domestic input on CDSCC’s current risk environment. Perimeter fencing and monitoring has identified off-site security risks, such as unauthorised public access to the CDSCC site. Administrative measures, including designating the area as restricted air space, mitigate aerial threats to controlled apparatus on antennas from unmanned aerial vehicles. Safety access control systems and measures include badge and swipe card access to authorised staff only; site escort procedures for unauthorised personnel; and lock out- arrangements for access to the antenna combine to provide an adequate level of security for the controlled apparatus. CSIRO use a NASA network on the Tidbinbilla site that is not fully compatible with the CSIRO IT network. For example, CSIRO’s electronic TRIM record system does not function on the NASA network. However, it does not have a direct impact on safety as a VPN allows staff to access other CSIRO documents on site. FindingsThe inspection revealed the following potential non-compliance:* Disposal of two Hallet 30 UV water treatment units without prior approval as required under Regulation 53(1).

The inspection revealed the following areas for improvement:1. SWIs were not always positioned adjacent to controlled apparatus.
2. Authorised staff have not signed and given effect to all SWIs.
3. Safety management structure.
4. Update training records.

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