



**Australian Government**

**Australian Radiation Protection and Nuclear Safety Agency**

## INSPECTION REPORT

<b>Licence Holder:</b> CSIRO Energy Business Unit (EBU)	<b>Licence Number:</b> S0025
<b>Location inspected:</b> Clayton, VIC	<b>Date of inspection:</b> 21 October 2015
	<b>Report No:</b> R15/14340

An inspection was conducted under Part 7 of the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act). The purpose of the inspection was to assess compliance with the Act, applicable regulations, and licence conditions. The inspection was conducted as part of ARPANSA's baseline inspection programme.

The scope of the inspection included an assessment of EBU's performance based on the source licence Performance Objectives and Criteria.

### Background

The role and intent of the EBU is to deliver energy solutions for a sustainable future. Their research aims to improve the affordability, reliability and integration of renewable energy technologies, including solar, wind and biofuels. EBU has several sites throughout Australia including Victoria, New South Wales, Western Australia and Queensland. Victoria has two types of controlled apparatus whilst the other sites have multiple controlled material and apparatus. Configuration management at EBU has to do with ensuring that the controlled material and controlled apparatus are used and maintained in accordance with the design and licensing requirements as expressed in relevant documentation.

The inspection consisted of a review of records, interviews, and a physical inspection of the controlled apparatus at the Clayton premises.

### Observations

In general, the management of radiation safety at the EBU Clayton premises was found to be satisfactory.

The *Radiation Protection Plan* (EBU's Plans and Arrangements) for the Clayton site, was comprehensive and covered Effective Control, Safety Management, Radiation Protection, Radioactive Waste, Ultimate Disposal or Transfer, Security and Emergency situations. There were, however, inconsistencies and ambiguities noted within the document which were discussed at the North Ryde inspection in August/September 2015 and are being addressed.

The Radiation Protection Plan had been reviewed in July 2015 and was scheduled for its next review in July 2016.

There were no sealed or unsealed radioactive materials at the Clayton premises of EBU.

The x-ray analysis unit used at the Clayton site was a Bruker AXS XRD D2 Phaser SN: 207508 (purchased in 2013). Appropriate warning lights and signs were fitted to the unit. The unit was rated to provide effective radiation protection up to the maximum rated kV of the x-rays emitted and control measures such as failsafe electronic interlocks were fitted to prevent exposure to x-rays. The interlocks on the x-ray unit were tested during the inspection and found to be operating satisfactorily. EBU staff made monthly radiation checks around the x-ray cabinet that revealed no radiation readings above background levels.

The results of these monthly checks were recorded in a logbook that was kept adjacent to the unit. Radiation measurements taken around the x-ray unit during the inspection confirmed that there were no readings significantly above the background radiation level.

The UV apparatus were examined during the inspection. The UV apparatus (Source ID: 1712) a transilluminator (Spectroline ENF-260C/FE) cabinet with 254nm and 365nm sources was appropriately labelled with UV warning signs and a power cord with a key lock to prevent use of the unit. The UV apparatus (Source ID: 1702) a 150W Xenon Arc lamp has been decommissioned and was suitably tagged for disposal.

The XRD and UV equipment had safe work instructions (SWI) prominently displayed adjacent to or on the equipment and all personnel who were required to use the equipment were appropriately trained. Training records were sighted during the inspection.

Copies of the following documents were provided during the inspection; emergency procedures for site, radiation safety awareness x-ray analysis training course, authorised users list, SWI for XRD and UV equipment, radiation risk control plans and an example of the CSIRO radiation safety committee quarterly meetings.

EBU's quarterly reports had been submitted to ARPANSA in a timely manner and contained relevant information, including Regulation 52 and 53 submissions for the acquisition, relocation and disposal of sources. The quarterly reports contained no reports of incidents or accidents, which was confirmed by EBU personnel during the inspection.

#### **Good Practice**

The inspection revealed a good practice at the CSIRO as below:

The portable UV apparatus has a 'power lock out' attached to the power cord with a key lock preventing use. The key is held by the person responsible for the device.

#### **Findings**

At the time of inspection, it appeared that the licence holder had complied with the Act, applicable regulations, and licence conditions.