Inspection report

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| **Licence holder:** Geoscience Australia – Geodesy and Seismic Monitoring Branch (GA) | **Licence number:** S0047 |
| Location inspected: MOBLAS5 Satellite Laser Ranging (SLR) Station, Yarragadee WA | **Date/s of inspection:** February – April 2018 |
| **Report no:** R18/03929 |
| 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 S0047. The scope of the inspection included an assessment of the performance of GA’s SLR station at Yarragadee, WA, against the Source Performance Objectives and Criteria. BackgroundThe Geodesy and Seismic Monitoring Branch of GA (part of the Department of Industry, Innovation and Science) operates the SLR station at Yarragadee in Western Australia. Class 4 Lasers are utilised for tracking and ranging orbiting satellites under contractual arrangements with other organisations around the world. A radar is used for aircraft detection system at the site. GA manages the safe operation of the lasers and is licensed under section 33 of the Act to deal with controlled apparatus (lasers) at their Yarragadee and Mt Stromlo sites.The main codes and standards applicable to this source are:1. Australian/New Zealand Standard Safety of laser products Part 1: Equipment classification (AS/NZS IEC 60825-1:2014)
2. Australian/New Zealand Standard Safety of laser products Part 14: A user’s guide (AS/NZS IEC 60825-14:2011)

ObservationsThe information provided for the baseline inspection shows the management of safety margins for the Yarragadee SLR station to be satisfactory.Performance Reporting VerificationGA’s quarterly reports have been submitted to ARPANSA in a timely manner in recent years, and contained relevant information, including details of compliance with the Act and Regulations. The Laser Safety Officer (LSO) coordinates information for quarterly reports.Configuration ManagementThe comprehensive Workplace Health and Safety Manual (WHSM) for the Yarragadee Geodetic Observatory demonstrates that the organisation has knowledge of the physical configuration and operational methods of the laser. The manual covers all aspects of WHS including both laser safety and other work health and safety topics.The WHSM states that the LSO is responsible for establishing and periodically reviewing control measures although there was no evidence that this was being done by GA staff. NASA staff, however, perform most of this work.GA advises that NASA maintains configuration control over the laser system at Yarragadee and in so doing, has carried out extensive testing and characterisation of the associated laser hazards. NASA performed the risk assessment for the laser.Inspection, Testing and MaintenanceThe Laser Hazard Reduction System and Laser Interlock Verification Procedure (MOBLAS 5, 6 and 8) requires an operational verification check to be performed following any repairs or every 3 calendar months. Records of the checks are required to be kept on file for at least three years. GA provided a copy of the most recent checklist (February 2018) for reference.TrainingAll personnel working at the Yarragadee site are required to undergo an induction course, the procedure for which is included as Appendix A of the WHSM.All staff working with the laser equipment are required to undergo a laser safety course. Personnel permitted to operate the laser are listed in the WHSM and a copy of the safety certificate for four of these operators, including the LSO, were provided as part of the inspection information.Event Protection and Emergency Preparedness and ResponseSections 3 and 4 of the WHSM outline potential hazards on site and cover emergency procedures to deal with them. Contact details of appropriate health and emergency services are given in Section 4.Radiation ProtectionGA management has demonstrated a commitment to laser protection by establishing a policy to facilitate the safe and effective use of the laser at the site. The WHSM is a comprehensive set of guidelines and procedures prepared to maintain compliance with radiation legislation and ARPANSA licence conditions. There was, however, no indication of the version provided to ARPANSA as part of the inspection. The WHSM referred to a laser classification system in accordance with the Australian Standard however, examples given actually related to the American ANSI standard potentially causing some confusion. It is acknowledged that GA is operating the radar with and for NASA however, the laser description needs either to match the reference or appropriate wording to discuss their collaboration with NASA.The WHSM required annual eye examinations for all personnel regularly working in the laser room although there was no evidence that this was being done. It is noted that clause 11 of AS/NZS IEC 60825-1:2014 recommends that routine ophthalmic examinations should only be carried out when medically advisable and not used for routine screening. GA has indicated that this requirement in the WHSM will be reviewed in light of the recommendations in AS/NZS IEC 60825-1:2014.Appropriate protective control measures are in place covering engineering controls, administrative controls and personal protective equipment. Photographic evidence provided as part of the e-Inspection requirements indicated appropriate signage is in use for this apparatus. SecurityAs there are no radioactive sources at Yarragadee, RPS11 is not invoked. Security measures are therefore considered to be appropriate as for any laser device.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. WHMS lacks version control information
2. The laser classification outlined in the WHSM does not match the reference
3. Not all procedures prescribed in the WHSM were being performed by GA staff
4. Annual eye examinations were not being performed as per the requirements within the WHSM

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