

Summary of Annual Compliance Monitoring Report: Calendar Year 2021

This annual compliance monitoring report for the 2021 calendar year has been prepared as per licence condition 3.2 of the Whiteshell Laboratories (WL) Licence NRTEDL-W5-8.00/2024 and Canadian Nuclear Safety Commission (CNSC) REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills* as a summary report of annual compliance monitoring and operational performance.

Canadian Nuclear Laboratories (CNL) would like to acknowledge Canada's Indigenous Peoples and their traditional territories upon which CNL carries out its work. CNL also wishes to confirm its commitment to being an active participant in Canada's journey towards healing and reconciliation.

This annual compliance report provides CNL 2021 performance data for WL and is organized by 14 Safety and Control Areas (SCAs)¹, as well as a report on each of the WL nuclear and non-nuclear facilities.

The following provides overall performance highlights for 2021 activities:

- All licensed activities continued to be carried out safely and securely.
- No member of the public received a radiation dose that exceeded any regulatory limit.
- No worker at WL received a dose in excess of any of the respective radiation dose limits for radiation workers, as defined in the Radiation Protection Regulations.
- All releases of radioactive material in WL effluents during 2021 were below their respective Derived Release Limits (DRL).
- Demolition of Building 200, the former Active Liquid Waste Treatment Centre (ALWTC), is complete, and Building 402/305, the former Health and Safety Facilities, is partly demolished.
- The WL site maintained safe and compliant performance under COVID-19 Pandemic conditions and protocols.

Below is a summary of the annual compliance report for calendar year 2021.

- **SCA - Management System:** WL has continued its focus on implementation of the corporate management system, as well as the WL Quality Assurance program for decommissioning. After having no Canadian Nuclear Safety Commission (CNSC) inspections in 2020, four inspections were carried out in 2021.
- **SCA - Human Performance Management:** A significant effort towards training individuals in human performance related areas continued as a result of the fieldwork pause in 2020 November. Another outcome of the fieldwork pause was the development and delivery of the initial Annual General Employee Training which goes

¹ The CNSC evaluates how well licensees meet regulatory requirements and CNSC expectations for the performance of programs in 14 safety and control areas.

over site and project updates, as well as review of policies and procedures. This will be updated and delivered annually to all employees.

- **SCA - Operating Performance:** WL decommissions and operates its facilities according to prescribed programs and procedures, and monitors safety performance in the operational area through the concept of “events”. The total number of internal event reports raised continues to show a strong reporting culture. There were six CNSC reportable events in 2021.
- **SCA - Safety Analysis:** Effective Safety Analysis Reports and Facility Authorizations continue to be in place for WL’s nuclear facilities, helping meet health, safety, security, environmental and regulatory requirements. Safety analyses continue to be developed for the standpipe/bunker remediation, Intermediate-Level Liquid Waste Processing Centre and Cask Loading facilities being constructed in the Waste Management Area.
- **SCA - Physical Design:** The Certificate of Authorization was renewed with Engineers Geoscientists Manitoba, authorizing CNL to engage in the practice of professional engineering in Manitoba. The new revised WL Pressure Boundary Quality Assurance Plan was accepted by Inspection and Technical Services Manitoba and a new Certificate of Authorization was issued.
- **SCA - Fitness for Service:** The Periodic Inspection Plan (PIP), previously developed to confirm the ongoing fitness-for-service of the concrete storage facilities at the Waste Management Area (WMA), continued implementation with no significant issues identified. Regular preventative or corrective maintenance and testing of WL’s safety-related systems were carried out to ensure the systems were fit-for-service. Missed maintenance of safety-related systems was reported to CNSC, and a corrective action plan was developed that will fix the issues and prevent recurrence.
- **SCA - Radiation Protection:** No worker received a whole-body dose (including committed) in excess of any of the respective dose limits for radiation workers as defined in the Radiation Protection Regulations, and average individual doses remain a small fraction of these limits. Maximum dose to a person working at WL was 0.6 mSv and collective doses remained below 50 person-mSv (19.0 person-mSv) for 2021. Members of the public received no measureable radiation doses.
- **SCA - Conventional Health and Safety:** Implementation of CNL’s Occupational Safety and Health program at WL continues to drive improvements in safety and safety culture. Safety advisories are regularly issued to staff about imminent issues that could impact their safety. There were no lost-time injuries at WL in 2021.
- **SCA - Environmental Protection:** The results of the radiological and non-radiological effluent monitoring program demonstrate that controls for the release of potentially hazardous substances currently in place at WL continue to provide substantial protection of the environment. Radiological emissions were 0.00019% of the Derived Release Limit (DRL) for air emissions and 0.45% of the DRL for liquids. The monitoring program confirms that the WL site is operating in a manner that protects workers, the public, and the environment. WL maintained their ISO-14001 registration, and are compliant to a number of CSA environmental standards.

- **SCA - Emergency Management and Fire Protection:** The Emergency Management program at WL continued to be focussed on supporting COVID-19 planning and coordination efforts, providing procedures and guidance to enable work to continue safely in this dynamic situation. A third party Fire Protection Audit was conducted, and resolution to findings will be tracked through the corrective action program.
- **SCA - Waste Management:** WL continued to reuse or recycle as much material as was practicable. Radioactive, clearable and hazardous wastes were generated from both ongoing operational activities and decommissioning projects, including disposition of 924 m³ of radioactive waste to Chalk River Laboratories (CRL), and 271 m³ (37,145 kg) of recycled waste shipped off-site. The WL Site Overview Detailed Decommissioning Plan was revised and accepted by CNSC.
- **SCA – Security:** The Security Program at WL supports the CNL Corporate Security mandate and addresses the regulatory requirements for high-security sites. Nuclear Security Officers assigned regular duties continued to meet the physical and psychological fitness requirements for Security Officers as required by the CNSC.
- **SCA - Safeguards:** There were no issues identified with International Atomic Energy Agency (IAEA) Safeguards inspections conducted at WL. The IAEA also provided human surveillance and IAEA seal verification, removal and reapplication during canister inspection activities.
- **SCA - Packaging and Transport:** There were 68 radioactive transport packages making up 53 loads that were safely and successfully sent off-site, including approximately 921 m³ of low-level waste and 3 m³ of intermediate-level waste shipped to CRL.
- **Other matters of regulatory interest:** Two virtual meetings of the WL Public Liaison Committee took place. Numerous public information sessions and Indigenous engagements (mainly virtual) were held on the Whiteshell Reactor 1 (WR-1) in-situ decommissioning and overall activities of the WL Closure Project, including four Webinars.
- **Facilities** (operating nuclear facilities, permanently shut down facilities, facilities being decommissioned and the non-nuclear facilities): All the licensed activities in these facilities continue to be carried out safely and securely with acceptable radiation doses to personnel and releases to the environment. The following notable facility-specific activities took place: the Active Liquid Waste Treatment Centre, Building 200, completed demolition, and significant progress was made in demolition of the Health and Safety Facilities, Building 402/305.

CNL is committed to achieve high standards of operational safety and security. The information and data presented in this report support the conclusion that safe and secure performance was achieved at the Whiteshell Laboratories site, while enhancements were implemented to further improve results.