

EXECUTIVE SUMMARY

This annual compliance monitoring report for the 2021 calendar year has been prepared as per licence condition 3.2 of the Chalk River Laboratories Licence NRTEOL-01.00/2028, Canadian Nuclear Safety Commission (CNSC) regulatory document REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills*, and the associated site licences held by Canadian Nuclear Laboratories (CNL) sites.

Canadian Nuclear Laboratories 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 stand-alone, unrestricted document provides CNL compliance monitoring and performance information based on the CNSC's 14 Safety and Control Areas (SCA). Part I of this report specifically encompasses the programmatic updates and performance of the 14 SCAs and CNL's Public Information and Disclosure program as applicable to all Canadian Nuclear Laboratories sites.

In addition, Part II of the report provides compliance monitoring and performance data for the 14 SCAs as they are applied to Chalk River Laboratories (CRL). Overall operational performance for the Class I and Class II nuclear facilities, Class II prescribed equipment, nuclear facilities in extended shutdown state, nuclear facilities in storage-with-surveillance, nuclear facilities undergoing decommissioning activities, radioisotope laboratories, and facilities that handle nuclear materials at CRL is provided as Appendices to this document. Confidential information related to this report is submitted to CNSC staff as a separate attachment to a confidential cover letter.

Some CNL highlights for 2021 are as follows:

- CNL, alongside the Indigenous Communities, hosted a series of virtual information sessions designed to discuss proposed projects and potential impacts. Despite ongoing COVID-19 restrictions, CNL continued to ensure that informational documents outlining long term plans and strategies were disseminated to Indigenous communities and the public in order to provide further insight into the overall plans and goals for Canadian Nuclear laboratories.
- In 2021 March, the Canadian Nuclear Safety Commission announced its decision to amend the waste facility decommissioning licence issued to CNL for the Douglas Point Waste Facility. The DPWF has been in a safe, shutdown state of storage-with-surveillance for more than three decades, which has allowed for sufficient radioactive decay to enter into the next phase of decommissioning.
- The first annual Sustainability Report for CNL was released in 2021 June. In pursuit of more sustainable operations and with the goal of demonstrating alignment with AECL's

Sustainability Strategy, CNL has identified 14 focus areas of environmental leadership, governance and social responsibility. This report brings together a summary of goals and achievements in each of these key areas, and helps to outline a future direction for a more sustainable CNL. This document has been posted for public viewing on the [CNL website](#) and is available in both official languages.

- In July, the CNSC announced acceptance of the Final Environmental Impact Statement for the Near Surface Disposal Facility Project. This was a key step in the environmental assessment process for the Project. CNSC staff also deemed all environmental assessment and licensing application documents acceptable. In October, the CNSC announced dates for a two-part public hearing to consider CNL's application to amend its operating licence to authorize the construction of the proposed Near Surface Disposal Facility.
- CNL completed the capping and closure of the engineered aboveground mound at the Port Granby Project Long-Term Waste Management Facility in September 2021. This project saw more than 1.3 million tonnes of contaminated soil and industrial waste safely isolated from the environment.
- In 2021 October, CNL and Isotope Technologies Munich SE, a leading radiopharmaceutical biotech company, announced the signing of a Memorandum of Understanding to explore the development and industrial-scale production of Actinium-225 to bring the next-generation of medical radioisotopes to the global market.

CNL continues to work towards meeting the federal sustainability development strategy by delivering the most carbon-friendly and energy efficient buildings using Canadian forest products.

CNL has continued to safely manage the existing federal liabilities on behalf of Atomic Energy of Canada Limited.

The performance highlights for the activities at Chalk River Laboratories are as follows:

- All licensed activities continued to be carried out safely and securely.
- No member of the public received a radiation dose that exceeded the regulatory limit.
- No employee received a dose in excess of any of the respective radiation dose limits for radiation workers, as defined in the Radiation Protection Regulations.

NRU remained in its permanently shutdown, de-fuelled and de-watered state. Facility Post Operational Clean Out activities continued with reduction of inventories of stored hazardous materials and operational wastes.

All releases from airborne and liquid effluent sources were below their respective release limits; overall, airborne and liquid emissions have decreased in 2021 when compared to 2020 levels. (The effluent monitoring results for both radiological and non-radiological effluents have been

submitted to CNSC staff in a separate report, *Effluent Verification Monitoring at Chalk River Laboratories in 2021*).

The safety of personnel, the public, and the environment remained the foremost consideration, supported by management policies and actions. The operation and maintenance of CRL nuclear facilities was conducted in a manner that was safe, reliable, and secure.

The skyline of the Chalk River Laboratories site continued to evolve:

- CRL safely demolished its 100th building, a key milestone towards the revitalization and renewal of the campus.
- Construction of two new non-nuclear buildings was completed, with a third underway.
- CRL awarded the contract for the initial phase of construction for the new Advanced Nuclear Materials Research Centre (ANMRC); a facility which will serve as the cornerstone for CNL's nuclear research program for decades to come.
- The Algonquins of Ontario (AOO) have honoured the organization by bestowing a name upon the new site entrance building at the Chalk River Laboratories. Now known as the Minwamon Building, which means 'clear path' in the Algonquin language, the facility was officially inaugurated during a ceremony held in December at the Chalk River campus.

In 2021, the operation and maintenance of Chalk River Laboratories' Class I and Class II nuclear facilities was conducted in a manner that was safe, reliable and secure. All nuclear facilities in extended shutdown state, storage-with-surveillance state, nuclear facilities undergoing decommissioning activities, radioisotope laboratories, and other facilities that handle nuclear materials were operated safely and in compliance with regulatory requirements

CNL is committed to achieving high standards of operational safety and security. The information and data presented in the report support the conclusion that safe and secure performance is being achieved at CNL, while enhancements are being implemented to further improve results.

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CNLs continued COVID Pandemic Response

In alignment with actions recommended by the Canadian government and public health authorities, CNL continued to operate under reduced operations and according to its *Pandemic*

Recovery Plan to ensure changes and controls being advocated by federal and provincial governments were met.

Almost a year in, CNL's goal has not wavered in striving to reduce the risk of COVID-19 transmission in the workplace as much as possible. CNL, through the work of its Crisis Management Team, continual gradual phased recovery of operations from the period of reduced operations. The approach that was developed in early 2020 was based on various controls that were put in place to protect workers from COVID-19 related hazards, and was guided by a series of recovery plan objectives. The selection of work to be performed, in recovery phases, was risk-informed and included proactively identifying and addressing hazards, using sound procedures and proper oversight.

The recovery plan includes five phases, from planning through to post-pandemic, over an undefined period. Transition from one phase to the next is dependent on meeting defined criteria. CNL continued to adjust its protocols and requirements at each of its sites, based on provincial and municipal guidance.

CNL started 2021 in Phase 3, "Moderate Operations" of the 5-phase Pandemic Recovery Plan. Phase 3 allowed for additional headcount authorization for each of the Mission Areas, while continuing to ensure controls were place to ensure the safety of additional personnel onsite. Throughout Phase 3, headcount authorizations were increased or decreased at individual CNL-managed sites based on recommendations by health-care authorities.

In 2021 July, CNL sites, with the exception of Whiteshell Laboratories and Douglas Point Waste Facility, entered Phase 4, "New Normal", of the Pandemic Recovery Plan. Whiteshell Laboratories entered Phase 4 in 2021 August, followed by Douglas Point in 2021 November.

In order to ensure that staff and visitors were kept safe, CNL continued with several initiatives that were implemented in 2020, including:

- Remote work arrangements continued for most CNL staff, based upon remote work capability.
- Face Covering Protocols continued to be updated based on government recommendations, and identified where and when coverings were required and how exemptions would be handled.
- Daily COVID-19 screening for all CNL staff and contractors was established at all CNL locations and remains aligned with changing public health protocols.
- Physical headcount control at each of CNL-managed site based on epidemiological and local health authority advice.
- Changes to CNL work planning practices continued to include an assessment of COVID-19 required precautions, maintaining proper physical distancing, and the use of additional personal protective equipment and clothing during the execution of work.

- In addition, CNL continued to notify CNSC of any specific on-site COVID cases per the established CNL-CNSC COVID Notification agreement.

In 2021 the following initiatives were implemented:

- Instituted voluntary COVID-19 Polymerase Chain Reaction (PCR) testing and Rapid Antigen Detection Testing (RADT) for all asymptomatic CNL personnel currently working on site daily or occasionally.
- A vaccination policy was implemented in 2021 October all employees, including remote workers, to submit proof of vaccination. Those who chose not to submit proof were required to submit to testing up to twice per week in order to access their site.

CNL's Crisis Management Team continues to evaluate new information related to the COVID-19 risks across CNL's sites and their communities.