EXECUTIVE SUMMARY

This annual compliance monitoring report for the 2020 calendar year has been prepared as per licence condition 3.2 of the Chalk River Laboratories Licence NRTEOL-01.00/2028 , CNSC 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 CNL sites.

This stand-alone, unrestricted document provides Canadian Nuclear Laboratories (CNL) compliance monitoring and performance information based on the CNSC's 14 Safety and Control Areas (SCA). 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, this reportprovides 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 2020 are as follows:

- CNL has safely and securely completed all shipments of Highly Enriched Uranium (HEU) Target Residue Material (TRM) from Canada to Savannah River, South Carolina; representing the safe repatriation of TRM to the United States and the removal of a major nuclear liability. With the completion of the HEU Fuel Repatriation project in 2019, and the TRM Repatriation Project in 2020, CNL has fulfilled Canada's commitments to the Global Partnership Program and further reduced the nuclear liability at CRL.

- CNL successfully completed the excavation and relocation of approximately 1.3 million tonnes of historic low-level radioactive waste from the legacy storage site on the Lake Ontario shoreline in Southeast Clarington. The waste was safely transported to a new, engineered aboveground mound. This milestone represents continued progress in one of the largest and most complex environmental clean-up missions ever undertaken in Canada.

- CNL alongside the Indigenous Communities hosted a series of virtual information sessions designed to encourage Ottawa Valley companies to pursue commercial opportunities at the Chalk River campus through partnerships with CNL's major contractors. Despite 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 the laboratories.

- CNL appeared before the Canadian Nuclear Safety Commission (CNSC) for a hearing to consider the application to amend the Douglas Point Waste Facility (DPWF) decommissioning licence. 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 public hearing was a first of a kind for CNL as it was completely virtual to ensure safety during the COVID-19 pandemic.
- Vision 2030 has launched four key enabling initiatives to support CNL's transformation by driving efficiencies, encouraging creativity and collaboration, while solidifying CNL's place in the commercial market.

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.
- CNL signed a Project Host Agreement with Global First Power Ltd. (GFP) in support of GFP's proposed Micro Modular Reactor (MMR) Project to be located at Chalk River Laboratories. The agreement established the framework under which CNL and GFP will work co-operatively with respect to licensing, design, siting and other matters to support advancement of the project.

NRU remained in its permanently shutdown, de-fuelled and de-watered state. The NRU transition team continued to process tritiated and contaminated heavy water inventories through the Main Heavy Water Evaporator. Remaining heavy water quantities from the NRU Heavy Water System were processed, packaged and shipped out of the facility in 2020. The work performed in 2020 concluded the planned use of the Main Heavy Water Evaporator.

All releases from airborne and liquid effluent sources were below their respective release limits; overall, airborne and liquid emissions have decreased in 2020 when compared to 2019 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 2020*.)

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's Facilities Decommissioning team removed 13 buildings and continued to forge ahead, safely decommissioning aging and redundant infrastructure, addressing legacy waste liabilities, and cleaning up the Chalk River campus.
- In July, site preparation work, including site clean-up, grading, and soil studies, began at the Advanced Nuclear Materials Research Centre (ANMRC) construction site. The ANMRC will be one of the largest active research laboratories in Canada.
- The new Site Entrance Building/Logistics Warehouse and five-lane entry and exit laneways at the outer gate were officially opened, with staff transitioning into the new building in November.
- In December, the design phase approval for the Business Hub was received, it is set to proceed with full construction in 2021. At the same time, the Support Facility neared completion and is expected to reach Substantial Performance, meaning that the building is ready for its intended use and occupancy in early 2021.

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 manage the existing federal liabilities on behalf of Atomic Energy of Canada Limited. In 2020, important liability reduction was safely and securely achieved for Canada via the Global Threat Reduction Initiative.

In 2020, the operation and maintenance of all 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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COVID-19 Pandemic Response

In alignment with actions recommended by the Canadian government and public health authorities, CNL opted to reduce operations at all sites beginning 2020 March 18. The 'reduced operations' state meant that only the work necessary to ensure that CNL sites, facilities, equipment, and grounds were maintained and kept safe and compliant with regulatory requirements would be conducted. The planned approach to the reduction in operations was conducted in consultation with managers, unions, Atomic Energy of Canada Ltd., and the Canadian Nuclear Safety Commission to ensure compliance with safety, regulatory, and contractual requirements.

CNL, through the work of its Crisis Management Team, began planning for a gradual phased recovery of operations from the period of reduced operations. The approach that was developed 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 reduced operations and in the 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.

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

- Remote work arrangements were instituted for most CNL staff, based upon remote work capability.
- Face Covering Protocols were established that made wearing of a face covering mandatory on all CNL sites. This protocol 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 included 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.

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