

Summary of Annual Compliance Monitoring Report: Calendar Year 2018

Canadian Nuclear Laboratories' (CNL) Whiteshell Laboratories (WL) submits an annual compliance monitoring report to the Canadian Nuclear Safety Commission (CNSC) staff in compliance with Condition 5.1 of the WL site licence (NRTEDL-W5-8.04/2018).

The annual compliance report provides CNL 2018 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 2018 activities:

- There were no serious process failures at WL.
- 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 2018 were below their respective derived release limits.
- Significant progress was made on decommissioning of Building 200, the former Active Liquid Waste Treatment Centre.
- Two large non-nuclear buildings, Building 408 (Stores) and Building 415 (Warm Storage), were decommissioned and demolished.

Below is a summary of the annual compliance report for calendar year 2018.

- **Policy changes:** CNL now operates under eleven policies, committing the CNL organization at all levels, and at all locations (including WL), to conduct work under a consistently applied and established management framework.
- **Organizational changes:** Organizational changes included the planned announcement of an appointment to the position of Vice President, Decommissioning & Waste Management (D&WM).
- **SCA - Management System:** CNL has continued its focus on strengthening management system documentation, with a focus on the implementation level of processes and/or programs. The revised Quality Assurance program for decommissioning at WL, based on

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

Canadian Standards Association (CSA) N286.6 and aligned with CSA N286-12, was accepted by the CNSC.

- **SCA - Human Performance Management:** Progress has been made in preparation for implementation of applicable Fitness for Duty regulatory documents.
- **SCA - Operating Performance:** Whiteshell Laboratories 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 no CNSC reportable events.
- **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.
- **SCA - Physical Design:** A Certificate of Authorization was renewed with Engineers Geoscientists Manitoba, authorizing CNL to engage in the practice of professional engineering in Manitoba, and pressure relief valve repair and testing on site was discontinued.
- **SCA - Fitness for Service:** A Periodic Inspection Plan (PIP) was previously developed to confirm the ongoing fitness-for-service of the concrete storage facilities at the Waste Management Area (WMA), 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.
- **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, or visiting WL, have remained below 2.0 mSv and collective doses have not exceeded 50 person-mSv for at least the last decade (1.7 mSv and 40.0 person-mSv, respectively, for 2018). No member of the public received a radiation dose that exceeded the regulatory limit.
- **SCA - Conventional Health and Safety:** There were a number of changes to procedures/processes, including new training and implementation of new medical screening requirements for asbestos workers. There was one lost-time injury.
- **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 below 0.00016% of the Derived Release Limit (DRL) for air emissions and 0.38% 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. Whiteshell Laboratories maintained their ISO-14001 registration, and are working towards implementation of a number of CSA environmental standards.

- **SCA - Emergency Management and Fire Protection:** All planned emergency drills and exercises were completed. To create redundancy, an additional (alternate) team for the Emergency Operations Centre was formed in 2017, with training occurring in 2018. The action plan for the gaps identified for implementation of CSA N393, “Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances”, is complete.
- **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 to an off-site waste receiver of 3700 m³ of hydrocarbon contaminated soil and asbestos-containing building debris. The remainder of the former Experimental Cesium Pond soil waste sent to Chalk River Laboratories (CRL), as well as contaminated building debris generated from the demolition of Building 411 Decontamination Centre, and de-inventorying some of the legacy waste stored in Shielded Modular Above Ground Storage (SMAGS).
- **SCA – Security:** The Security Program at WL supports the CNL Corporate Security mandate and addresses the regulatory requirements for security. 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. One internal verification inspection was conducted with no recordable findings.
- **SCA - Packaging and Transport:** There were more than 300 radioactive transport packages successfully sent under the Transportation of Dangerous Goods (TDG) Program, including approximately 1300 m³ of low-level waste and 7.9 m³ of intermediate-level waste to CRL.
- **Other matters of regulatory interest:** Two meetings of the Whiteshell Public Liaison Committee took place, three meetings and two site tours were held for the WL Economic Regeneration Partnership, and numerous public information sessions and Indigenous engagements were held on Whiteshell Reactor 1 (WR-1) in-situ decommissioning.
- **Facilities** (operating nuclear facilities, permanently shutdown 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 new low-level liquid waste systems previously installed in Buildings 100 and 300, operated successfully; significant progress in decommissioning the Active Liquid Waste Treatment Centre, Building 200; the incinerator and associated Building 514 at the Waste Management Area were decommissioned and demolished; the former Stores and Warm Storage buildings (B408 and B415) were decommissioned and demolished; and commenced

decommissioning of two significant former experimental facilities, RD-14M and the Large-Scale Vented Combustion Test Facility.

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