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Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2023

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Summary	This CMD presents the Regulatory Oversight Report for sites operated by Canadian Nuclear Laboratories (CNL) for the 2023 calendar year.
Actions required	There are no actions requested of the Commission. This CMD is for information only.

CMD 24-M16

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2023

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Canada

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2023

Canadian Nuclear Safety Commission

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Table of contents

Changes since last review

Change	Rationale
New template	Template created to improve document accessibility
Organization of ROR by site instead of SCA	More straightforward to find information per site

Land Acknowledgement

The Canadian Nuclear Safety Commission (CNSC) is committed to building and strengthening trust and advancing reconciliation with Indigenous Nations and communities.

CNSC staff would like to acknowledge that the facilities and activities regulated by the CNSC and subject to this Regulatory Oversight Report are located on many traditional and treaty territories of Indigenous peoples in Canada. It is important to give recognition and thanks to the land and the Indigenous peoples that the CNSC works with across Canada.

The CNSC aims to be an open, culturally sensitive, respectful organization that engages in open and transparent dialogue, partnership, and collaboration with Indigenous Nations and communities. The CNSC envisions its staff as being active listeners who understand the role they play in advancing reconciliation and acknowledges that they have a lot to learn from Indigenous peoples and their perspectives.

Plain Language Summary

The *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2023* describes the safety performance of the sites that are licensed to Canadian Nuclear Laboratories (CNL) by the Canadian Nuclear Safety Commission (CNSC). It also provides details on CNSC staff's work to ensure the health, safety security, and the environment around the sites.

CNSC staff evaluated CNL's performance across the 14 safety and control areas (SCAs). This report provides the resulting performance ratings for the following sites for the 2023 calendar year:

- Chalk River Laboratories (CRL) – an operating nuclear research laboratory
- Whiteshell Laboratories (WL) – a nuclear research laboratory undergoing decommissioning
- Port Hope Area Initiative (PHAI):
  - Port Hope Project (PHP) – a long-term low-level radioactive waste remediation project
  - Port Granby Project (PGP) – a long-term low-level radioactive waste remediation project
  - Port Hope Pine Street Extension Temporary Storage Site – a temporary storage site for low-level radioactive waste
  - Port Hope Radioactive Waste Management Facility – a temporary storage facility for low-level radioactive waste
- Douglas Point Waste Facility – a shutdown prototype power reactor
- Gentilly-1 Waste Facility – a shutdown prototype power reactor
- Nuclear Power Demonstration Waste Facility – a shutdown prototype power reactor

The CNL sites continued to operate safely in 2023, and monitoring data demonstrates that both the water and food grown in proximity to these sites are safe to consume. There were no releases that have harmed the health or safety of the people or the environment.

Each year, CNSC inspectors conduct inspections at the CNL sites. The number of inspections and their focus depend on the individual site and its performance. The CNSC uses a risk-informed approach when planning inspections. In 2023, CNSC staff performed a total of 33 inspections at the CNL sites; the details of these inspections are covered in this report. The inspections resulted in the issuance of 119 notices of non-compliances (NNCs), most of which have been closed. For the remaining open NNCs, CNL has an appropriate corrective action plan in place to prevent recurrences. None of the NNCs issued in 2023 posed a risk to the health and safety of the public or the environment.

The CNSC assesses the safety performance of licensees by conducting regulatory oversight activities, including inspections, technical assessments of licensee reports, reviews of events and incidents, and general communication and exchanges of information with licensees. While the CNSC evaluates licensees across 14 SCAs, the main focuses of this report are the following 3 SCAs, as these provide a good overview of safety performance at CNL sites:

- **Radiation protection:** In 2023, the maximum individual effective radiation dose to a worker at any of the CNL sites occurred at the CRL site and was 4.27 mSv, which is 9% of the CNSC's regulatory limit for effective dose of 50 mSv in a 1-year dosimetry period.
- **Environmental protection:** In 2023, two non-radiological action level exceedances at two separate CNL sites were reported to the CNSC as follows:
  - CNL reported action level exceedances of manganese in the outfall liquid effluent samples at WL. The exceedances were attributed to accumulated sediment on roadways that was not removed by street sweeping.
  - An action level exceedance was reported for copper in a composite liquid sample at the PHAI. The exceedance was attributed to epoxy coating on cast iron components deteriorating and allowing the cast iron to come into contact with the effluent.

  These exceedances did not pose a risk to workers, the public, or the environment. The actions taken by CNL were reviewed and found to be acceptable by CNSC staff. Airborne and waterborne releases of radioactive and hazardous substances at all other CNL sites remained below their respective regulatory and action level limits in 2023. In compliance with applicable regulatory requirements, CNL has implemented environmental protection programs at its licenced facilities in Canada that are protective of the environment and the public.
- **Conventional health and safety:** All CNL sites must report any workplace-related lost-time injuries to the CNSC and to federal/provincial agencies. In 2023, there were a total of 5 lost-time injuries reported, 1 more than in the previous year.

CNSC staff are involved in the oversight of several major projects occurring at CNL CRL in 2023. These projects include the:

- Near Surface Disposal Facility
- Advanced Nuclear Materials Research Centre
- Modern Combined Electrolysis and Catalytic Exchange Facility
- Actinium-225 Initial Sales Project
- Land Lease for Commercial Project Development

Details on these projects can be found in Section 4: Other Matters of Regulatory Interest

For 2023, CNSC staff rated all SCAs as "satisfactory", at all CNL sites except WL. Human performance management and emergency management and fire protection SCAs at WL were rated as "below expectations". Details on these ratings can be found in Sections 2.2.5 and 2.2.7 respectively. CNL has compensatory measures in place for both programs; health, safety, security, and environment were not compromised. The security SCA at CRL, previously rated at below expectations in 2022, has changed to satisfactory for 2023. Details on this rating can be found in Section 2.1.13. For a description of the different performance ratings, please refer to Appendix B.

Despite the 2 ratings of below expectations at WL, CNSC staff conclude that CNL performed its licensed activities across all sites safely in 2023. This conclusion was supported by safety performance measures and observations, including that CNL:

- operated safely within the bounds of its operating policies and principles
- followed approved procedures that took adequate corrective actions for all events reported to the CNSC

and that:

- the health and safety of Indigenous Nations and communities and the public near its sites, as well as the surrounding environment, continue to be protected,
- workers at each CNL site have conducted the licensed activities safely and are properly protected,
- there were no releases from CNL sites that could have harmed the environment or the health and safety of people.

Referenced documents in this CMD are available to the public upon request, subject to confidentiality considerations.

1 Overview

1.1 Background

Each year, the Canadian Nuclear Safety Commission (CNSC) publishes regulatory oversight reports, which offer information on the safety performance of Canadian licensees. These reports evaluate licensees based on their safety procedures and adherence to regulatory requirements. For more information on the CNSC's regulatory oversight activities, please see Appendix A.

Learn more about regulatory oversight reports

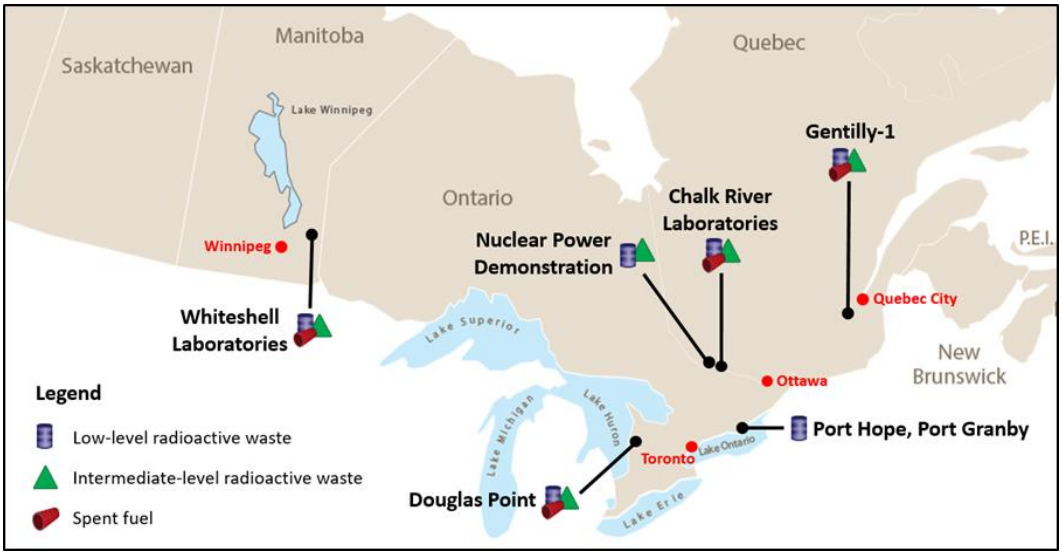
1.2 Scope of report

The regulatory oversight report describes the regulatory oversight and safety performance of Canadian Nuclear Laboratories (CNL).

1.2.1 Nuclear facilities covered by this report

Nuclear facility	Location	Licensee
Chalk River Laboratories (CRL)	Chalk River, Ontario	Canadian Nuclear Laboratories
Whiteshell Laboratories (WL)	Pinawa, Manitoba	
Port Hope Area Initiative (PHAI)	Port Hope, Ontario Port Granby, Ontario	
Douglas Point Waste Facility (DPWF)	Tiverton, Ontario	
Gentilly-1 Waste Facility (G1WF)	Bécancour, Québec	
Nuclear Power Demonstration Waste Facility (NPDWF)	Rolphton, Ontario	

Figure 1: Sites covered by this report



CNSC staff would like to acknowledge the Indigenous Nations and communities (Appendix H) whose traditional and/or treaty territories are within proximity to the CNL sites covered by this report.

2 Assessment of Safety and Control Areas

The CNSC regulates all aspects of safety at nuclear sites in Canada, including the health, safety, security, and the environment. CNSC staff assess performance in the 14 SCAs by verifying licensee compliance through planned or reactive desktop reviews and inspections (Appendix D). Each SCA's definition can be found in Appendix C. While this report addresses all 14 SCAs in the following sections, the following three are discussed in greater detail: radiation protection, conventional health and safety, and environmental protection. These three SCAs offer a comprehensive overview of safety performance at CNL sites. SCAs that have a change in their performance rating compared to the previous year are also discussed in greater detail, along with evidence supporting these changes. For SCAs with no inspection activities in 2023, a summary is provided under the combined heading "Other Safety and Control Areas". CNSC staff's oversight activities for these SCAs were similar and resulted in the same conclusions.

For both radiation protection and environmental protection SCAs, action levels are used to denote precise thresholds to safeguard against exceedances of radiation dose and environmental release limits. Action level exceedances are reportable to the CNSC.

CNSC staff have determined that the notices of non-compliance (NNCs) from inspections and all action level exceedances were adequately addressed either through closure or an appropriate corrective action plan and did not impact the safety at CNL sites.

Learn more about Action Levels

2.1 Chalk River Laboratories (CRL)

2.1.1 Overview

- Licence: 10-year licence granted in 2018
- Licence expiry: 2028
- Licensee: Canadian Nuclear Laboratories
- Location: Chalk River, Ontario

Figure 2: View of the CRL built-up area
(Source: CNL)

CRL is located in Chalk River, Ontario, 160 kilometers northwest of Ottawa (Figure 2), on the traditional, unceded territory of the Algonquin Anishinaabeg People. CRL operates under a single licence that includes Class I and Class II nuclear facilities, waste management areas, radioisotope laboratories, support facilities and offices. CNL safely manages low, intermediate, and high-level radioactive waste at the site.

Where permitted by the current licensing basis, CNL is continuing to shut down and decommission legacy facilities and is constructing and commissioning replacement facilities throughout the site.

Learn more about Chalk River Laboratories

Summary of SCA performance ratings for CRL (Appendix B)

Safety and control area	Rating
1. Management system	Satisfactory
2. Human performance management	Satisfactory
3. Operating performance	Satisfactory
4. Safety analysis	Satisfactory
5. Physical design	Satisfactory
6. Fitness for service	Satisfactory
7. Radiation protection	Satisfactory
8. Conventional health and safety	Satisfactory
9. Environmental protection	Satisfactory
10. Emergency management and fire protection	Satisfactory
11. Waste management	Satisfactory
12. Security	Satisfactory
13. Safeguards and non-proliferation	Satisfactory
14. Packaging and transport	Satisfactory

Summary of the number of inspections performed for CRL

Type 1	Type 2	Desktop	Field	IAEA Safeguards	Number of findings*
0	14	0	5	56	77

*Number of findings is specifically related to CNSC inspections

2.1.2 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory

2.1.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into the design, planning, management, and control of radiological work activities. In 2023, CNL continued to implement the corporate ALARA process at CRL to control doses and minimize exposures.

Dose control points (DCP) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2023, no NEW's dose exceeded their assigned DCP by more than 1 mSv at the CRL site.

2.1.2.2 Worker Dose Control

Radiation exposures of workers at the CRL site are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses

ALARA. CRL uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

2.1.2.2.1 Nuclear Energy Workers (NEWs)

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's regulatory effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2023, the maximum effective dose received by a NEW at CRL was 4.27 mSv, well below the CNSC's regulatory effective dose limit.

The CNSC's regulatory equivalent dose limit for NEWs is 500 mSv in a one-year dosimetry period. In 2023, the maximum skin dose received by a NEW at CRL was 6.76 mSv, and the maximum extremity dose received by a NEW at CRL was 13.18 mSv, well below the CNSC's regulatory dose limit.

Data on dose to workers at CRL from 2019 to 2023 can be found in Appendix K.

2.1.2.2.2 Non-NEWs

The CNSC's regulatory effective and equivalent dose limits for persons who are not NEWs are 1 mSv and 50 mSv respectively, in one calendar year. In 2023, the maximum effective and equivalent (skin) doses received by a person not considered as a NEW at CRL was 0.23 mSv and 0.28 mSv, respectively, well below the CNSC dose limit.

2.1.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the CRL site to verify that the radiation protection program complies with CNSC's regulatory requirements. In 2023, CNSC staff conducted 13 inspections that included the Radiation Protection SCA which resulted in 13 NNCs issued to CNL. These NNCs pertained to:

- inaccurate labelling of containers containing nuclear substances
- radiation warning signage either obstructed, illegible, incomplete, or misdated
- expired annual reviews of some radiological safety zoning plans and expired work permits
- missing labelling of verification test performed on a radiation instrument
- nonadherence to some radiation protection measures

Due to the immediate actions taken by CNL, these NNCs did not pose a risk to the health and safety of the workers. CNSC staff confirmed that CNL effectively implemented corrective

actions to address the NNCs. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers CRL staff to determine the cause and, if applicable, restore the effectiveness of the RP program. In 2023, there were no action levels reached at CRL.

2.1.2.4 Radiological Hazard Control

Radiation and contamination control programs include the use of radiation zone controls, surface contamination monitoring, in-plant air monitoring and radiological dose rate surveys. The programs continued to be implemented at CRL to control and minimize radiological hazards and the spread of radioactive contamination. In 2023, there were no contamination incidents that resulted in a recordable unplanned external or internal dose.

2.1.3 Environmental Protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the Open Government Portal: CNSC Open Government Portal.

CNSC staff assess CNL's performance in the Environmental Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 5 inspections that included the Environmental Protection SCA which resulted in 1 NNC issued to CNL. This NNC pertained to:

- soil remediation activities commenced prior to providing CNSC staff with the Remedial Action Plan

CNL stopped work until the Remedial Action Plan was received, reviewed, and accepted by the CNSC. The NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken by CNL to address this NNC was acceptable and the NNC was closed.

Based on CNSC staff assessment of CRL's effluent and environmental monitoring results, past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at CRL meets the applicable regulatory requirements. A detailed summary of CRL's Environmental Protection performance is provided below.

Performance rating: Satisfactory

2.1.3.1 Effluent and Emissions Control

In 2023, CNL revised and submitted CRL's administrative levels and action levels for CRL's radioactive effluents and emissions. CNSC staff reviewed these document revisions and determined that they met regulatory requirements. There were no regulatory or action level exceedances at CRL in 2023.

CNSC staff reviewed CRL's 2023 Effluent Verification Monitoring Program results, which indicated that:

- All airborne and liquid effluent radiological releases remained below their respective regulatory limits
  - The sum of the average airborne weekly releases from all monitored and estimated sources was 0.096% of the Derived Release Limits (DRL)
  - The sum of the average liquid monthly release from all monitored and estimated sources was 0.067% of the DRL
- The estimated dose to the public from all air and liquid emissions was 0.0024mSv and is well below the regulatory public dose limit of 1mSv/year
- No regulatory release limits were exceeded

Overall, CNSC staff determined that the effluent verification monitoring program at CRL continues to protect the environment and the public.

2.1.3.2 Assessment and Monitoring

In compliance with CSA N288.4, *Environmental Monitoring Program at Class I Nuclear Facilities and Uranium Mines and Mills* [2], CNL has implemented an Environmental Monitoring Program (EMP) at CRL.

CNSC staff's review of CNL's EMP annual report results at CRL for the year 2023 indicate that the EMP currently in place for CRL protects the environment and the public.

2.1.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada. CRL's EMS conforms to and is accredited to the International Standards Organization (ISO) 14001:2015 Standard, *Environmental Management Systems – Requirements with Guidance for Use* [3].

2.1.3.4 Environmental Risk Assessment

The environmental risk assessment (ERA) conducted by licensees is a systematic process used to identify, quantify, and characterize the risk posed by contaminants and physical stressors to the environment and human health. An ERA includes an Ecological Risk Assessment and a Human Health Risk Assessment. As per Section 11 of CSA Standard N288.6-12 [4], ERAs should be reviewed on a five-year cycle. CNL's most recent ERA was completed in 2019 and thus the submission of an updated ERA was expected in December 2023. CNSC staff acknowledge that the COVID-19 pandemic has resulted in certain delays of the planned CNL follow-up studies required to support the recommendations and benchmark values in the ERA. CNSC staff also note:

- CNL's intention to address certain gaps in incorporating recent environmental monitoring and characterization data
- refinements to the evaluation of risk
- updates to the Valued Components under consideration
- the results of its external engagements efforts with Indigenous Nations and communities and the public

Following a review, CNSC staff accept CNL's proposal that the updates to the ERA be completed and submitted to the CNSC by January 31, 2025. CNSC staff conclude that CNL continues to pursue the implementation of an effective ERA at CRL.

CNL's 2019 ERA for CRL met CNSC staff's expectations. CNL has committed that they will work toward filling the gaps summarized above to improve and refine the ERA in future years. CNL continues to keep CNSC staff informed on the progress of the ERA update at quarterly CNSC-CNL Environmental Protection meetings. CNSC staff will complete the review of CNL's updated ERA and provide details of the assessment in the next ROR.

2.1.3.5 Protection of the Public

As part of the annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in proximity to the licensed site. CNL's data indicates that doses to the public resulting from CNL's operations at CRL remained well below the 1 mSv/year limit prescribed in the *Radiation Protection Regulations* [1]. Additionally, the emissions from the CRL site did not exceed the constraint for dose to the public of 0.30 mSv/year indicated in the CRL Licence Condition Handbook.

Based on CNSC staff assessment of the results in CNL's 2023 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from CNL sites met the regulatory requirements.

CRL maximum effective dose to a member of the public from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Limit
Maximum effective dose (mSv)	0.0036	0.0072	0.0037	0.0026	0.0024	1 mSv/year

2.1.4 Conventional Health and Safety

As CNL sites are federally regulated, they are subject to the requirements of the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. CNL has developed and implemented a program to manage the workplace safety hazards and protection of workers on the job while ensuring compliance with the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6].

Activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. Contractors work under their own health and safety programs in accordance with the Ontario Regulations. Contractor programs are reviewed and accepted by CNL and must meet or exceed the requirements of CNL's licences.

CNSC staff assess CNL's performance in the Conventional Health and Safety SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance verification activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2023, CNSC staff conducted 16 inspections that included the Conventional Health and Safety SCA which resulted in 17 NNCs issued to CNL. These NNCs pertained to:

- inappropriate signage and pipe labels
- inappropriate personal protective equipment
- systems and equipment testing
- workplace hazards
- worker training and assessments
- updates to the Conventional Health and Safety governing documents

CNL implemented immediate corrective actions to address these NNCs. Thus, the NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff reviewed and determined that the corrective actions taken by CNL were acceptable. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs.

Further detail on the assessment of this SCA is in the subsections below.

Performance rating: Satisfactory

2.1.4.1 Performance

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

In 2023, there were 3 RLTIs at CRL which led to 38 lost working days. The frequency of employee RLTIs was 0.11 while the severity was 1.35. The 3 employee RLTIs were:

- a laceration and fracture to an employee's hand
- knee-strain
- back pain

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs at CRL in 2023.

2.1.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2023.

2.1.5 Management System

CNSC staff assess CNL's performance in the Management System SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 5 inspections that included the Management System SCA which resulted in 9 NNCs issued to CNL. These NNCs pertained to:

- corporate documents containing inconsistent processes

- role designation inappropriately assigned
- signatures missing on work control authorization forms
- actions raised from annual management review meetings not tracked and monitored appropriately

Due to CNL's immediate actions, the NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs.

Performance rating: Satisfactory

2.1.6 Human Performance Management

CNSC staff assess CNL's performance in the Human Performance Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 4 inspections that included the Human Performance Management SCA. 1 NNC linked to the Security SCA was issued to CNL. Further discussion of this NNC can be found in Section 2.1.13 Security.

Currently there are 2 CNSC certified National Research Universal Health Physicists at CRL. No performance issues related to these certified staff were reported or discovered by CNSC staff.

CNSC staff note that 1 NNC related to managing worker fatigue raised from a focused Human Performance inspection conducted in March 2022 remained open through 2023 while CNL implemented corrective actions. The corrective actions have been addressed and the NNC has been closed as of April 23, 2024.

Performance rating: Satisfactory

2.1.7 Operating Performance

CNSC staff assess CNL's performance in the Operating Performance SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 15 inspections that included the Operating Performance SCA which resulted in 6 NNCs issued to CNL. These NNCs pertained to:

- procedures not reviewed or signed off
- safety signage being illegible
- equipment calibration being incomplete
- entrance doors not having adequate access control
- daily logs not accurately summarizing the state of a facility

CNSC staff determined CNL's immediate actions to address these NNCs were acceptable and thus, the NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on any remaining open NNCs.

Performance rating: Satisfactory

2.1.8 Safety Analysis

CNSC staff assess CNL's performance in the Safety Analysis SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 3 inspections that included the Safety Analysis SCA which resulted in 1 NNC. This NNC pertained to:

- reviews of operating procedures that affect nuclear criticality safety were not completed

The NNC did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken by CNL to address this NNC was acceptable, and the action is closed.

Performance rating: Satisfactory

2.1.9 Physical Design

CNSC staff assess CNL's performance in the Physical Design SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff reviewed program documentation, quality manuals and design reports from CNL. CNSC staff's oversight determined that CNL continued to operate CRL in compliance with the requirements of this safety and control area.

Performance rating: Satisfactory

2.1.10 Fitness for Service

CNSC staff assess CNL's performance in the Fitness for Service SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 6 inspections that included the Fitness for Service SCA which resulted in 8 NNCs issued to CNL. These NNCs pertained to:

- some materials and equipment being improperly stored or labeled
- certain procedures, programs, and assessments not being implemented or reviewed
- assessments of operating and maintenance data were not being conducted

The NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken by CNL to address the NNCs were acceptable and the NNCs were closed.

CNL has completed a self-assessment of the aging management program at all CNL sites and is undergoing a project to implement its aging management program at all facilities. CNSC staff hold regular meetings with CNL staff to discuss the progress of implementation of the aging management program at CNL sites.

Performance rating: Satisfactory

2.1.11 Emergency Management and Fire Protection

CNSC staff assess CNL's performance in the Emergency Management and Fire Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 13 inspections that included the Emergency Management and Fire Protection SCA which resulted in 11 NNCs issued to CNL. These NNCs pertained to:

- non-compliant fire extinguisher installation
- non-compliant material storage practices and chemical labelling
- inconsistent signs identifying fire doors
- improper fire dampers identification
- egress aisles obstruction
- non-compliant flammable storage containers
- non-compliant waste management areas
- fire protection reviews not performed
- documentation updates and reviews not performed

CNSC staff accepted CNL's action plan and will continue to monitor their progress via regular updates. As of June 24, 2024, 9 NNCs have been closed, and 2 NNCs remain open. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress to implement the identified actions as outlined in CNL's action plan.

Performance rating: Satisfactory

2.1.12 Waste Management

CNSC staff assess CNL's performance in the Waste Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 7 inspections that included the Waste Management SCA which resulted in no NNCs.

CNL submitted a total of five Storage with Surveillance (SWS) plans and one combined SWS/Detailed Decommissioning Plan (DDP) to CNSC staff for acceptance in 2023. CNSC staff conducted a review of each plan and found them acceptable. In 2023, CNL also submitted the CRL Overview Decommissioning and Cleanup Plan (ODCP) for CNSC staff for acceptance; CNSC reviewed and accepted the ODCP. The ODCP replaces the Comprehensive Preliminary Decommissioning Plan.

Performance rating: Satisfactory

2.1.13 Security

CNSC staff assess CNL's performance in the Security SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). December 15, 2022, CNL submitted a detailed SPOP (Security Program Oversight Plan) that identified issues resulting from performing CNL quality assurance audits, extent of condition reviews and security management workshops. In 2023, CNSC staff continued to receive quarterly updates from CNL on the performance of the SPOP submitted in 2022, as discussed in *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2022* [7].

The quarterly updates from CNL included:

- progress of the actions outlined in the plan
- the outcomes achieved
- the status of focused actions to meet the intent of the Security Order

CNL has confirmed closure of all actions and submitted the revised Tactical Response Plan (TRP) for CNSC staff review in May 2023, with a formal request to close the Order issued in 2021 that was associated with the lack of adequate security measures in the waste management areas. CNL also submitted the TRP implementation plan that outlined timelines and steps for full implementation that was accepted by CNSC staff. CNSC staff assessed CNL's submissions resulting in the closure of the open security Order.

On October 10th, 2023, CNSC staff conducted an inspection to verify CNL's compliance with the regulatory requirements through verification of its physical protection program, including the protected area, physical barriers, and associated systems. The inspection also verified CNL's completed actions identified in its Implementation Plan and its security practices and response arrangements. CNSC staff raised two NNCs that were low safety and risk significance, that CNL immediately addressed.

Between March 20, 2023, and August 4, 2023, CNSC staff conducted a focused cyber-security program inspection which resulted in 13 NNCs. CNSC staff requested that CNL review the Cyber Security program to better understand the circumstances that led to these non-compliances and to determine immediate compensatory measures to strengthen the program.

CNL provided an implementation plan that identified immediate actions and compensatory measures to strengthen its Cyber Security program and provided assurance that the implementation of these actions will mitigate any potential security risks until the program gaps and non-compliances are fully addressed. These actions include:

- implementation of additional physical protection for access control of its Cyber Essential Assets (CEAs)
- revision of program documents
- update of information associated with threats and risk assessment
- suspending the disposal of CEAs when removed from service

CNL committed to the following follow-up actions to improve oversight of the Cyber Security program:

- applying its Management System process
- completing enhancements to its internal audits and assessment programs
- reviewing program resources to ensure availability of adequate funding and recruitment of qualified personnel

CNSC staff accepted CNL's action plan and will continue to monitor their progress via quarterly updates. As of April 21, 2024, 3 NNCs have been closed, and 10 low security risk NNCs remain open. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress to implement the identified actions as outlined in CNL's action plan.

The security program at CRL was assessed as below expectations in 2022. Following the significant improvements made by CNL, and verified by CNSC staff through technical reviews, quarterly meetings, and a focused inspection to verify compliance, CNSC staff assessed the security program at CRL as Satisfactory in 2023 and conclude that there is no immediate risk to security of the nuclear substances at the CRL site.

Performance rating: Satisfactory

2.1.14 Safeguards and Non-Proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events (Appendix E), and through the course of CNSC- or IAEA-led inspections (Appendix D). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including CRL. CNSC staff accompany IAEA during their activities. In 2023, there were 56 IAEA-led inspections at CRL. No significant issues were identified as a result of these inspections. CRL continued to maintain adequate documentation and submissions regarding the Safeguards SCA to the CNSC.

Performance rating: Satisfactory

2.1.15 Packaging and Transport

CNSC staff assess CNL's performance in the Packaging and Transport SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Packaging and Transport SCA which resulted in 1 NNC issued to CNL. The NNC pertained to:

- packages classified as radioactive should have been classified as exempt.

The NNC did not pose a risk to the health and safety of the public and the environment. CNL committed to updating internal documents to ensure proper package classification. CNSC staff reviewed CNL's proposed actions and determined the response to be acceptable. CNL continues to maintain and effectively implement a packaging and transport program at their Chalk River facility. CNSC staff will continue to maintain regulatory oversight.

Performance rating: Satisfactory

2.2 Whiteshell Laboratories (WL)

2.2.1 Overview

- Licence: 5-year licence granted in 2019
- Licence expiry: 2024
- Licensee: Canadian Nuclear Laboratories
- Location: Pinawa, Manitoba

Figure 3: Whiteshell Laboratories main campus *(Source: CNL)*

WL is a former nuclear research and test facility located near Pinawa, Manitoba that was established in the early 1960s (Figure 3). It is located in the homeland of the Red River Métis, Treaty 1 and Treaty 3 territories, and the traditional territory of the Anishinaabe and Ojibway Peoples. The WL site is also located in the vicinity of Treaty 5 territory. The site hosts a 60-megawatt thermal (MWth) Whiteshell Reactor No. 1 (WR-1), a SLOWPOKE demonstration reactor, other research and support facilities, and a waste management area that contains low-, intermediate- and high-level radioactive waste. The WR-1 and SLOWPOKE reactors were permanently shut down in 1985 and 1990, respectively. Decommissioning activities at WL commenced in 2003. CNL applied for a 3-year renewal for the WL decommissioning licence on November 21, 2023. The Licencing Hearing occurred on October 23-24, 2024.

Learn more about Whiteshell Laboratories

2.2.1.1 2023 Site Safety Stand-Down

In April 2023, CNL conducted a self-assessment of its fire protection program at the WL site, finding deficiencies in training records for on-site fire brigade members and incomplete equipment procedures. Consequently, CNL reported the event to the CNSC, leading to a shutdown of non-essential activities. CNSC staff informed the Commission of the WL FPP deficiencies and site stand down of operational activities and CNSC staff regulatory oversight on June 28, 2023, via an Event Initial Report (CMD 23-M25). Further information on this event is available in Section 4.1 of this report.

Summary of SCA performance ratings for WL (Appendix B)

Safety and control area	Rating
1. Management system	Satisfactory
2. Human performance management	Below Expectations
3. Operating performance	Satisfactory
4. Safety analysis	Satisfactory
5. Physical design	Satisfactory
6. Fitness for service	Satisfactory
7. Radiation protection	Satisfactory
8. Conventional health and safety	Satisfactory
9. Environmental protection	Satisfactory
10. Emergency management and fire protection	Below Expectations
11. Waste management	Satisfactory
12. Security	Satisfactory
13. Safeguards and non-proliferation	Satisfactory

14. Packaging and transport	Satisfactory

Summary of the number of inspections performed for WL

Type 1	Type 2	Desktop	Field	IAEA Safeguards	Number of findings*
0	5	0	0	2	25

*Number of findings is specifically related to CNSC inspections

2.2.2 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory

2.2.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into design, planning, management, and control of radiological work activities. In 2023, CNL continued to implement the corporate ALARA process at WL to control doses and minimize exposures.

Dose control points (DCP) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2023, no NEW's dose exceeded their assigned DCP by more than 1 mSv at the WL site.

2.2.2.2 Worker Dose Control

Radiation exposures of workers at WL are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. WL

uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility staff and contractors.

2.2.2.2.1 Nuclear Energy Workers (NEWs)

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's regulatory effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2023, the maximum effective dose received by a NEW at WL was 0.21 mSv, well below the CNSC's regulatory effective dose limit.

The CNSC's regulatory equivalent dose limit for NEWs is 500 mSv in a one-year dosimetry period. In 2023, the maximum skin dose received by a NEW at WL was 0.40 mSv, and the maximum extremity dose received by a NEW at WL was 0.08 mSv, well below the CNSC's regulatory dose limit.

Data on dose to workers at WL from 2019 to 2023 can be found in Appendix K.

2.2.2.2.2 Non-NEWs

The CNSC's regulatory effective dose limits for persons who are not NEWs is 1 mSv in one calendar year. In 2023, the maximum effective and equivalent (skin) doses received by a person not considered as a NEW at WL was 0.10 mSv, well below the CNSC dose limit.

2.2.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the WL site to verify that the RP program complies with CNSC's regulatory requirements. In 2023, CNSC staff conducted oversight activities including focused inspections, desktop reviews of submissions, periodic update meetings regarding licensing and compliance matters at the site, as well as ensuring compliance through CNL's own event reporting. WL's performance remained unchanged in 2023. CNL continues to maintain an adequate Radiation Protection Program at the WL site.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers WL staff to determine the cause and, if applicable, restore the effectiveness of the radiation protection program. In 2023, there were no action levels reached at WL.

2.2.2.4 Radiological Hazard Control

Radiation and contamination control programs include the use of radiation zone controls, surface contamination monitoring, in-plant air monitoring and radiological dose rate surveys. The programs continued to be implemented at WL to control and minimize radiological hazards and the spread of radioactive contamination. In 2023, there were no contamination incidents that resulted in a recordable unplanned external or internal dose.

2.2.3 Environmental Protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the Open Government Portal: CNSC Open Government Portal.

CNSC staff assess CNL's performance in the Environmental Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Environmental Protection SCA which resulted in 2 NNCs. These NNCs pertained to:

- schedules for environmental monitoring, effluent verification monitoring, and groundwater monitoring schedules not up to date
- Environmental Protection staff training records not up to date

The NNCs did not pose a risk to the health and safety of the public or the environment. CNL took immediate corrective actions that included a review of WL's Environmental Protection Plans and updates to the corresponding schedules. CNL is also updating the Environmental Protection Program staff training records with completion date in August 2024. CNSC staff consider the risk to the health and safety of people and the environmental impact from these NNCs to be low. CNSC staff reviewed CNL's response and found them to be appropriate. CNL implemented corrective actions that were reviewed and accepted by CNSC staff. A detailed summary of WL's Environmental Protection performance is provided below.

Performance rating: Satisfactory

2.2.3.1 Effluent and Emissions Control

CNL has implemented and maintains an effluent verification monitoring program at WL that meets regulatory requirements. There were no regulatory exceedances related to Environmental Protection in 2023.

There were a few action level exceedances of non-radiological substances from WL's process outfall liquid effluent. CNL took immediate corrective actions and conducted follow-up

investigations. CNSC staff are satisfied with the actions taken by CNL. CNSC staff conclude that the exceedances event did not pose an unreasonable risk to the public and the environment.

CNL revised and submitted WL's Effluent Verification Monitoring Plan in 2023. CNSC staff reviewed the document and determined it met regulatory requirements and continues to protect the public and the environment.

Details of WL's Effluent Verification Monitoring Program results that are summarized below:

- All airborne and liquid effluent releases remained well below their respective regulatory release limits
- The Sewage Lagoon was not discharged in 2023
- Overall, radiological emission releases were 0.20015% of the DRL (of which 0.00015% corresponds to airborne emissions and 0.20% correspond to liquid emissions)
- Non-radiological releases from liquid effluent streams did not exceed CNL's Monthly Guideline Acceptance Criteria
- 1,203 tonnes of CO_2 were emitted which is below the Environmental and Climate Change Canada's (ECCC) Greenhouse Gas Emissions reporting threshold of 10,000 tonnes of CO_2
  - WL's greenhouse gas emissions have been steadily decreasing over the last 5 years
- 2.702 metric tonnes of particulate matter below 10 microns (PM_{10}) were emitted which exceeded the ECCC's National Pollutant Release Inventory (NPRI) reporting threshold [8] of 0.5 metric tonnes, so the PM_{10} monitoring values were reported by CNL
- There were no spills to the environment

Based on CNSC staff review of CNL's annual monitoring reports, CNSC staff conclude that the Effluent Verification Monitoring Program in place for WL met regulatory requirements.

2.2.3.2 Assessment and Monitoring

CNSC staff reviewed WL's 2023 Environmental Monitoring Program (EMP). The results of CNSC staff review indicate that:

- WL's EMP is in compliance with CSA standard N288.4, *Environmental Monitoring Program at Class I Nuclear Facilities and Uranium Mines and Mills* [2]
- All airborne and liquid effluent radiological releases remained below their respective regulatory limits
- The estimated dose to the public from all air and liquid emissions was 0.00006 mSv/a and is well below the regulatory public dose limit of 1 mSv/year
- The radiological and non-radiological substance levels in environmental media (e.g. air, water, soil, sediment, food, vegetation, wildlife) around the WL site were consistent with historical levels

Based on review and assessment of the EMP results presented in CNL's 2023 annual report, CNSC staff conclude that the environmental monitoring program in place for WL met the applicable regulatory requirements and remains protective of the public and environment.

2.2.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals and targets.

CNL established its corporate level EMS that is part of the overall CNL Management System, which applies to all CNL sites operated in Canada. WL's EMS conforms to and is accredited to the International Standards Organization (ISO) 14001:2015 Standard, *Environmental Management Systems – Requirements with Guidance for Use* [3].

2.2.3.4 Environmental Risk Assessment

WL submitted a Lagoon and Landfill (2021) and site-wide ERAs (2023). CNSC has reviewed both ERAs and provided comments. CNSC staff met with CNL in April 2024 regarding the status of each ERA and anticipate a revised submission of the site-wide ERA for CNSC staff review in 2024.

2.2.3.5 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

Based on CNSC staff assessment of the results in CNL's 2023 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from CNL sites met the regulatory requirements.

WL maximum effective dose to a member of the public from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Limit
Maximum effective dose (mSv)	0.00009	0.00005	0.00001	0.00002	0.00006	1 mSv/year

2.2.4 Conventional Health and Safety

As CNL sites are federally regulated, they are subject to the requirements of the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6].

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors work under their own health and safety programs in accordance with the Manitoba Regulations, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff assess CNL's performance in the Conventional Health and Safety SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2023, CNSC staff conducted 2 inspections that included the Conventional Health and Safety SCA which resulted in 1 NNC issued to CNL. This NNC pertained to:

- contents of first aid kits that were not in a "ready to use" state

The NNC did not pose a risk to the health and safety of the public and the environment. CNL implemented immediate corrective actions to address the NNC that CNSC staff reviewed and determined were acceptable. The NNC was then closed.

Further detail on the assessment of this SCA are detailed in the subsections below.

Performance rating: Satisfactory

2.2.4.1 Performance

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

In 2023, there were 4 RLTIs at WL which led to 25 lost working days. The frequency of employee RLTIs was 1.04 while the severity was 6.50. Of the 4 employee RLTIs:

- 2 resulted from slips on ice
- 1 was the result of a rolled ankle
- 1 was the result of a gym exercise

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There was 1 contractor RLTI in 2023 resulting in 4 working days lost.

2.2.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2023.

2.2.5 Human Performance Management

CNSC staff assess CNL's performance in the Human Performance Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 reactive inspection that included the Human Performance Management SCA which resulted in 4 NNCs issued to CNL. This reactive inspection was conducted in response to the 2022 and 2023 safety standdowns at Whiteshell. For further details, please see Section 4.1 Reportable events. The 4 NNCs were related to:

- outdated training documentation and requirements
- inaccurate training records
- limited access to training records by supervisors, a
- inconsistent training program evaluations.

In addition, issues in the Emergency Management and Fire Protection Program resulted in minimum staff complement not being maintained. Minimum staff complement is an aspect of Fitness for Duty due to its links with hours of work, fatigue, and the presence of a sufficient number of qualified workers to carry on the licensed activity safely. WL was not compliant with paragraph 12 (1) (a) of the *General Nuclear Safety and Control Regulations* [9], which states every licensee shall:

"…ensure the presence of a sufficient number of qualified workers to carry on the licensed activity safely and in accordance with the Act, the regulations made under the Act and the licence."

These deficiencies led to CNL's performance in the Human Performance Management SCA falling below CNSC staff expectations for the year 2023.

CNSC staff will increase regulatory scrutiny and compliance oversight of CNL's activities within the human performance management program. This will involve the implementation of a WL compliance plan, focusing on areas such as fitness for duty and personnel training. Specifically, CNSC will verify the Minimum Staff Complement to ensure a sufficient number of qualified workers are present to carry out licensed activities safely and in accordance with regulations. CNSC staff will enhance monitoring and compliance activities to confirm the effectiveness of CNL's human performance, fitness for duty, and training programs at the WL site. This increased oversight aims to ensure that CNL's operations remain safe and compliant with regulatory standards.

Performance rating: Below Expectations

2.2.6 Fitness for Service

CNSC staff assess CNL’s performance in the Fitness for Service SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance matters at the site, as well as ensuring compliance through CNL’s own event reporting.

CNL is required to conduct annual inspections of the WL Waste Management Area concrete bunkers in accordance with the Periodic Inspection Plan (PIP) and report the results annually to CNSC staff. Additionally, CNL performs quarterly inspections of the Concrete Canister Storage Facility (CCSF). These CCSF inspections have shown no significant cracking or spalling. CNSC staff have reviewed the inspection reports submitted by CNL for 2023 and determined that the WL Waste Management concrete bunkers and the CCSF continue to be fit–for-service.

Performance rating: Satisfactory

2.2.7 Emergency Management and Fire Protection

CNSC staff assess CNL’s performance in the Emergency Management and Fire Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In April 2023, CNL conducted a self-assessment of the WL fire protection program against CSA N393-13, *Fire protection for facilities that process, handle, or store nuclear substances* [10], revealing deficiencies in firefighter training records and equipment inspection procedures. This led to CNL reporting the event to the CNSC and implementing a safe shutdown at the WL site for essential maintenance. Subsequent regulatory

actions included a focused technical meeting and a 12(2) request for CNL to address the identified deficiencies promptly. The Commission has been previously informed of the WL fire protection program deficiencies (FPP) and site stand down of operational activities as part of CNSC staff regulatory oversight on June 28, 2023 in Event Initial Report (CMD 23-M25).

See full background details of the WL FPP deficiencies and site stand-down event in June 2023

Since then, CNSC staff have performed desktop reviews of submitted documents related to the WL FPP event and have conducted focused inspections including drills and emergency exercises. CNSC staff have assessed and continue to review CNL's progression and implementation of corrective actions through its Multi-Phase Restart plan for the WL site to return to normal operations, which CNSC staff have reviewed and accepted. CNSC staff observed additional findings through an EMFP reactive inspection conducted in August 2023 which resulted in 10 NNCs issued to CNL. These NNCs pertained to:

- deficiencies in firefighter medical assessments
- inappropriate storage of combustibles
- incorrect color-coding of a fire hydrant
- improper maintenance and identification of fire separations
- out-of-date pre-fire plans

On October 13, 2023, a CNSC Designated Officer subsequently issued an Administrative Monetary Penalty amount of $14,856 to CNL specifically for failing to comply with its Nuclear Research and Test Establishment Decommissioning Licence, NRTEDL-W5-8.00/2024 [24], condition 10.2. This licence condition states that:

"The licensee shall implement and maintain a fire protection program."

CNSC staff are developing a targeted compliance plan to supplement the baseline plan to verify that CNL's corrective actions to the WL FPP and other related programs are satisfactorily implemented.

Based on the licensee performance in 2023, CNSC staff concluded that CNL WL continues to be Below Expectations in performance for the Emergency Management and Fire Protection SCA.

Performance rating: Below Expectations

2.2.8 Security

CNSC staff assess CNL's performance in the Security SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D), and through the course of inspections. In 2023, CNSC staff conducted 1 inspection that included the Security SCA which resulted in 1 NNC issued to CNL. This NNC pertained to:

- a mid-point review that had not been completed for one CNL employee

CNL took immediate actions, including a detailed review, and conducted follow-up actions including providing documentation for CNSC staff review. CNSC staff were satisfied with CNL's actions and closed the NNC.

As a result of CNSC staff verification activities conducted in 2023, and the review of CNL's submissions, CNSC staff have determined that CNL has demonstrated compliance with regulatory requirements and there is no immediate risk to security of the nuclear substances.

Performance rating: Satisfactory

2.2.9 Safeguards and Non-Proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events (Appendix E), and through the course of CNSC- or IAEA-led inspections (Appendix D). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at various sites in Canada, including WL. CNSC staff accompany IAEA during their activities. In 2023, there were 2 IAEA-led inspections at WL. No significant issues were identified as a result of these inspections. WL continued to maintain adequate documentation and submissions regarding the Safeguards SCA to the CNSC.

Performance rating: Satisfactory

2.2.10 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2023 and reached the same conclusions:

- Management System
- Operating Performance
- Safety Analysis
- Physical Design
- Waste Management
- Packaging and Transportation

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting (Appendix E). WL's performance in these SCAs has remained unchanged in 2023.

Performance rating: Satisfactory

2.3 Port Hope Area Initiative (PHAI)

2.3.1 Overview

- Licence: 10-year licence granted in 2023
- Licence expiry: 2032
- Licensee: Canadian Nuclear Laboratories
- Location: Port Hope and Port Granby

Figure 4: Work in Port Hope – Waterfront Sites *(Source: CNL)*

Figure 5: Port Granby – Remediation Completed *(Source: CNL)*

The PHAI is a federal government initiative based on a community proposal, which includes the Port Hope Long-Term Low-Level Waste Management Project (Port Hope Project – PHP) and Port Granby Long-Term Low-Level Waste Manage Project (Port Granby Project – PGP) (Figure 4 and Figure 5). The Government of Canada, through Natural Resources Canada, has committed to clean up low-level radioactive waste in the Port Hope area and provide long-term safe management of the historic low-level radioactive wastes in the Port Hope area. These wastes arose from the activities of a former federal Crown Corporation (Eldorado Nuclear) and its private sector predecessors. The PHAI is on the traditional territory of the Michi Saagig Anishinaabe People. These lands are covered by the Williams Treaty between Canada and the Mississauga and Chippewa Nations.

Through its Historic Waste Management Office, CNL is implementing the PHAI on behalf of AECL.

For the 2023 reporting period, CNL has 1 licence associated with PHAI. Following a one-day hearing on November 22, 2022, the Commission announced its decision to renew the PHP licence for a 10-year period beginning January 01, 2023. As part of the decision, the

Commission consolidated the licensed activities previously authorized under 4 of CNL's waste nuclear substance licences under a single licence. The new licence is valid from January 01, 2023, until December 31, 2032.

Learn more about the Port Hope Area Initiative

Summary of SCA performance ratings for PHAI (Appendix B)

Safety and control area	Rating
1. Management system	Satisfactory
2. Human performance management	Satisfactory
3. Operating performance	Satisfactory
4. Safety analysis	N/A
5. Physical design	Satisfactory
6. Fitness for service	Satisfactory
7. Radiation protection	Satisfactory
8. Conventional health and safety	Satisfactory
9. Environmental protection	Satisfactory
10. Emergency management and fire protection	Satisfactory
11. Waste management	Satisfactory
12. Security	Satisfactory
13. Safeguards and non-proliferation	Satisfactory
14. Packaging and transport	Satisfactory

Summary of the number of inspections performed for PHAI

Type 1	Type 2	Desktop	Field	IAEA Safeguards	Number of findings*
0	4	0	0	2	8

*Number of findings is specifically related to CNSC inspections

2.3.2 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory

2.3.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into design, planning, management, and control of radiological work activities. In 2023, CNL continued to implement the corporate ALARA process at PHAI to control doses and minimize exposures.

Dose control points (DCP) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2023, no NEW's dose exceeded their assigned DCP by more than 1 mSv at PHAI.

2.3.2.2 Worker Dose Control

Radiation exposures of workers at PHAI are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. Dosimeters are used for measuring external doses (whole body and skin) of workers. Internal doses for PHAI workers, resulting from exposure to radon progeny and long-lived alpha, are

determined by indirect methods using concentration levels in air and time spent in work areas, or through the use of Personal Alpha Dosimeters.

2.3.2.2.1 Nuclear Energy Workers (NEWs)

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's regulatory effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2023, the maximum effective dose received by a NEW at PHAI was 0.79 mSv, well below the CNSC's regulatory effective dose limit.

The CNSC's regulatory equivalent dose limit for NEWs is 500 mSv in a one-year dosimetry period. In 2023, the maximum skin dose received by a NEW at PHAI was 0.64 mSv, well below the CNSC's regulatory dose limit.

Data on dose to workers at PHAI from 2019 to 2023 can be found in Appendix K.

2.3.2.2.2 Non-NEWs

The CNSC's regulatory effective dose limits for persons who are not NEWs is 1 mSv in one calendar year. In 2023, the maximum effective and equivalent (skin) doses received by a person not considered as a NEW at PHAI was 0.04 mSv, well below the CNSC dose limit.

2.3.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the PHAI to verify that the RP program complies with CNSC's regulatory requirements. In 2023, CNSC staff conducted 4 inspections that included the Radiation Protection SCA which resulted in 4 notices of non-compliance issued to CNL related to:

- insufficient provision of dose information to NEWs
- inadequate posting of radiation warning signage
- lack of performing and recording contamination and gamma surveys
- ensuring dosimetry is worn by NEWs as required

Due to CNL's immediate actions, the NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff confirmed that CNL effectively implemented corrective actions to address the NNCs. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress.

Action levels for radiological exposures are established as part of CNL's RP program for the PHAI. If an action level is reached, it triggers CNL staff to establish the cause and, if applicable, restore the effectiveness of the RP program. In 2023, no action levels were reached at the PHAI.

2.3.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the PHAI to control and minimize radiological hazards and the spread of radioactive contamination. Routine monitoring across the PHAI in 2023 confirmed that work activities were executed while minimizing the spread of contamination.

2.3.3 Environmental Protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the Open Government Portal: CNSC Open Government Portal.

CNSC staff assess CNL's performance in the Environmental Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 4 inspections for the PHAI that included the Environmental Protection SCA which resulted in 1 notice of non-compliance issued to CNL:

- the Dust Monitoring Plan was not implemented at Waterworks West and Viaducts sites

The NNC did not pose a risk to the health and safety of workers, the public and the environment and has been closed. CNL performed the required testing as per the plan and updated their processes and documents to mitigate any repeated instances that lead to this NNC. CNSC staff reviewed CNL's actions and found them to be acceptable. CNSC staff will continue to maintain regulatory oversight.

Based on CNSC staff assessment of PHAI's effluent and environmental monitoring results, past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at PHAI met the applicable regulatory requirements. A detailed summary of PHAI's Environmental Protection performance is provided below.

Performance rating: Satisfactory

2.3.3.1 Effluent and Emissions Control

CNL has implemented and maintains an effluent verification monitoring program at the PHAI that meets regulatory requirements. There were no regulatory exceedances related to Environmental Protection in 2023.

There was an action level exceedance for copper in a composite liquid effluent sample at the Port Hope Project's Wastewater Treatment Plant the week of May 22, 2023. CNL reported the event to CNSC and took immediate corrective actions to successfully reduce the copper concentration in the effluent to below action levels. In their investigation, CNL found the elevated copper was due to the deterioration of the epoxy coating on cast iron components, allowing the cast iron to come into contact with the effluent. The components were replaced and CNSC staff were satisfied with CNL's response and actions taken. This event did not pose a risk to human health or the environment.

CNSC staff reviewed the PHAI's 2023 effluent monitoring results which indicate that:

- All airborne and liquid effluent releases of radiological and hazardous substances in surface water, groundwater, soil, sediment, air, dust, noise, and gamma exposure were below regulatory limits
- All airborne and liquid effluent releases of radiological and hazardous substances remained will below their regulatory limits

Overall, CNSC staff determined that the effluent verification monitoring program at PHAI continue to be protective of the environment and the public.

2.3.3.2 Assessment and Monitoring

Surface water samples were collected by CNSC staff from the harbour area during an environmental protection inspection and analysed at the CNSC Laboratory. All sample results were within the expected range documented in CNL's enhanced harbour water quality program.

CNSC staff conclude that the environmental monitoring programs in place for the PHAI are compliant with applicable regulatory requirements and are protective of the environment and the public.

2.3.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including PHAI.

2.3.3.4 Environmental Risk Assessment

As the PHAI licence does not fall under the Class I Nuclear Facility designation, CNL is not required to have an ERA as per REGDOC 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures* [11] and CSA N288.6-12, *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills* [4].

2.3.3.5 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

Based on CNSC staff assessment of the results in CNL's 2023 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from CNL sites met the regulatory requirements.

PHP maximum effective dose to a member of the public from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Limit
Maximum effective dose (mSv)	0.0350	0.033	0.023	0.028	0.020	1 mSv/year

PGP maximum effective dose to a member of the public from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Limit
Maximum effective dose (mSv)	0.0396	0.020	0.041	0.033	0.01	1 mSv/year

2.3.4 Conventional Health and Safety

As CNL sites are federally regulated, they are subject to the requirements of the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the

job while ensuring compliance with the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6].

The majority of activities performed for the PHAI are performed by contractors which are provincially regulated, and as such are subject to the provincial requirements. In most cases, contractors work under their own health and safety programs in accordance with the Ontario Regulations, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff assess CNL's performance in the Conventional Health and Safety SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2023, CNSC staff conducted 3 inspections that included the Conventional Health and Safety SCA for the PHAI which resulted in no NNCs.

Further detail on the assessment of this SCA is in the subsections below.

Performance rating: Satisfactory

2.3.4.1 Performance

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

In 2023, there no RLTIs for the PHAI.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There was 1 contractor RLTI in 2023 resulting in 1 working day lost.

2.3.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for the PHAI, as contractors perform a wide variety and large number of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's

Improvement Action data to determine trends and monitor actions and determined that CNL's Improvement Action System was satisfactory in 2023.

2.3.5 Management System

CNSC staff assess CNL's performance in the Management System SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Management System SCA which resulted in 3 NNCs issued to CNL. These NNCs pertained to:

- absence of role differentiation between approver and worker
- improper sign-off on a contractor calibration log
- non-operational hi-volume air samplers

The NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken or planned to address these NNCs were acceptable. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the open NNCs.

Performance rating: Satisfactory

2.3.6 Safety Analysis

Due to the scope of work under the licence, the Safety Analysis SCA does not apply to PHAI.

2.3.7 Fitness for Service

CNSC staff assess CNL's performance in the Fitness for Service SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Fitness for Service SCA for the PHAI which resulted in no NNCs.

Performance rating: Satisfactory

2.3.8 Waste Management

CNSC staff assess CNL's performance in the Waste Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, there were no inspections conducted by CNSC staff for the PHAI that included the Waste Management SCA.

In August 2023, CNL responded to CNSC staff comments on the Preliminary Decommissioning Plan for Port Granby Project (PGP) proposing to delay the PG PDP implementation due to the

estimated duration required to seek third part assistance in addressing the remaining CNSC staff comments. The revised PG PDP will be submitted in June 2024 along with the Port Hope Project (PHP) PDP for CNSC staff review.

Performance rating: Satisfactory

2.3.9 Safeguards and Non-Proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events (Appendix E), and through the course of CNSC- or IAEA-led inspections (Appendix D). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including PHAI sites. CNSC staff accompany IAEA during their activities. In 2023, there were 2 IAEA-led inspections at PHAI sites. No significant issues were identified as a result of these inspections. PHAI continued to maintain adequate documentation and submissions regarding the Safeguards SCA to the CNSC.

Performance rating: Satisfactory

2.3.10 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2023 and reached the same conclusions:

- Human Performance Management
- Operating Performance
- Physical Design
- Emergency Management and Fire Protection
- Security
- Packaging and Transportation

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting (Appendix E). The PHAI's performance in these SCAs has remained unchanged in 2023.

Performance rating: Satisfactory

2.4 Douglas Point Waste Facility (DPWF)

2.4.1 Overview

- Licence: 10-year licence granted in 2021
- Licence expiry: 2030
- Licensee: Canadian Nuclear Laboratories
- Location: Tiverton, Ontario

Figure 6: Douglas Point Waste Facility
(Source: CNL)

The DPWF located in Tiverton, Ontario on the Bruce nuclear site is a partially decommissioned prototype power reactor (Figure 6). The DPWF is located within the traditional territory of the Saugeen Ojibway Nation (SON), and the harvesting areas of the Georgian Bay Métis Nation of Ontario (MNO) and the Historic Saugeen Métis (HSM) Peoples. The 200-megawatt electric (Mwe) prototype Canada deuterium uranium (CANDU) power reactor was put into service in 1968 and permanently shut down in 1984. CNL safely manages low- and intermediate-level radioactive wastes, as well as spent nuclear fuel stored in concrete dry storage canisters at the DPWF site.

Learn more about Douglas Point Waste Facility

Summary of SCA performance ratings for DPWF (Appendix B)

Safety and control area	Rating
1. Management system	Satisfactory
2. Human performance management	Satisfactory
3. Operating performance	Satisfactory
4. Safety analysis	Satisfactory
5. Physical design	Satisfactory
6. Fitness for service	Satisfactory
7. Radiation protection	Satisfactory

8. Conventional health and safety	Satisfactory
9. Environmental protection	Satisfactory
10. Emergency management and fire protection	Satisfactory
11. Waste management	Satisfactory
12. Security	Satisfactory
13. Safeguards and non-proliferation	Satisfactory
14. Packaging and transport	Satisfactory

Summary of the number of inspections performed for DPWF

Type 1	Type 2	Desktop	Field	IAEA Safeguards	Number of findings*
0	2	0	0	2	3

*Number of findings is specifically related to CNSC inspections

2.4.2 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory

2.4.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into design, planning, management, and control of radiological work activities. In 2023, CNL continued to implement the corporate ALARA process at DPWF to control doses and minimize exposures.

Dose control points (DCP) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2023, no NEW's dose exceeded their assigned DCP by more than 1 mSv at DPWF.

2.4.2.2 Worker Dose Control

Radiation exposures of workers at DPWF are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. DPWF uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

2.4.2.2.1 Nuclear Energy Workers (NEWs)

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's regulatory effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2023, the maximum effective dose received by a NEW at DPWF was 0.55 mSv, well below the CNSC's regulatory effective dose limit.

The CNSC's regulatory equivalent dose limit for NEWs is 500 mSv in a one-year dosimetry period. In 2023, the maximum skin dose received by a NEW at DPWF was 0.65 mSv, well below the CNSC's regulatory dose limit.

Data on dose to workers at DPWF from 2019 to 2023 can be found in Appendix K.

2.4.2.2.2 Non-NEWs

The CNSC's regulatory effective dose limits for persons who are not NEWs is 1 mSv in one calendar year. In 2023, persons not considered as NEWs at the DPWF received no recordable effective doses.

2.4.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the DPWF to verify that the RP program complies with CNSC's regulatory requirements. In 2023, CNSC staff conducted 1 inspection that included the Radiation Protection SCA at DPWF which resulted in 1 NNC issued to CNL related to:

- incomplete and illegible radiation warning signage

The NNC did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken to address the NNC were acceptable and the NNC was closed.

Action levels for radiological exposures are established as part of CNL's RP program for the DPWF. If an action level is reached, it triggers CNL staff to establish the cause and, if applicable, restore the effectiveness of the RP program. In 2023, no action levels were reached at the DPWF.

2.4.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the DPWF to control and minimize radiological hazards and the spread of radioactive contamination. The radiological hazard surveys conducted in 2023 at the DPWF did not identify any adverse trends and were consistent with expected radiological conditions.

2.4.3 Environmental Protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the Open Government Portal: CNSC Open Government Portal.

CNSC staff assess CNL's performance in the Environmental Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, there were no inspections conducted by CNSC staff at DPWF that included the Environmental Protection SCA. Based on CNSC staff assessment of DPWF's effluent and environmental monitoring results, past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at DPWF meets the applicable regulatory requirements. A detailed summary of DPWF's Environmental Protection performance is provided below.

Performance rating: Satisfactory

2.4.3.1 Effluent and Emissions Control

CNL has implemented and maintains an effluent verification monitoring program for DPWF that meets regulatory requirements. There were no regulatory or action level exceedances at DPWF in 2023.

CNSC staff reviewed DPWF's 2023 effluent monitoring results which indicate that:

- Airborne and liquid releases remained well below their regulatory release limits and DRLs (tritium and gross beta releases to air were less than <0.01% of their DRL; tritium and gross beta releases in liquid effluent were less than <0.01% of their DRL)
- There were no regulatory limit exceedances and no spills to the environment

CNSC staff determined that the effluent verification monitoring program at DPWF continues to be protective of the environment and the public.

2.4.3.2 Assessment and Monitoring

In 2023, CNL revised and submitted DPWF's derived release limits to the CNSC. CNSC staff reviewed the document revisions and determined they met regulatory requirements. CNL's programs continue to be protective of the environment and the public.

In addition, as DPWF is located within the Bruce Nuclear Site, CNL has confirmed that the Bruce Power environmental monitoring program potentially captures any environmental impacts emanating from the small contribution of DPWF. Review of Bruce Power's monitoring results indicate that the releases to the environment, potentially including contributions from DPWF, remained well below their respective regulatory limits.

2.4.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including DPWF.

2.4.3.4 Environmental Risk Assessment

DPWF had an ERA that met CNSC expectations for the 2023 calendar year.

2.4.3.5 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

Based on CNSC staff assessment of the results in CNL's 2023 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from CNL sites met the regulatory requirements.

2.4.4 Conventional Health and Safety

As CNL sites are federally regulated, they are subject to the requirements of the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors work under their own health and safety programs in accordance with the Ontario Regulations, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff assess CNL's performance in the Conventional Health and Safety SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2023, CNSC staff conducted 2 inspections that included the Conventional Health and Safety SCA which resulted in no NNCs.

Further detail on the assessment of this SCA is in the subsections below.

Performance rating: Satisfactory

2.4.4.1 Performance

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost

workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

In 2023, there were no employee RLTIs at the DPWF.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2023.

2.4.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2023.

2.4.5 Management System

CNSC staff assess CNL's performance in the Management System SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Management System SCA which resulted in 2 NNCs issued to CNL. These NNCs pertained to:

- The *Contractor Mobilization Checklist* not being completed
- Lack of evidence that all Subject Matter Experts identified to review contractor produced job hazard analysis completed their review

The NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken to address these NNCs were acceptable and the NNCs were closed.

Performance rating: Satisfactory

2.4.6 Fitness for Service

CNSC staff assess CNL's performance in the Fitness for Service SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Fitness for Service SCA which resulted in no NNCs.

Performance rating: Satisfactory

2.4.7 Waste Management

CNSC staff assess CNL's performance in the Waste Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Waste Management SCA which resulted in no NNCs.

Performance rating: Satisfactory

2.4.8 Safeguards and Non-Proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events (Appendix E), and through the course of CNSC- or IAEA-led inspections (Appendix D). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including DPWF. CNSC staff accompany IAEA during their activities. In 2023, there were 2 IAEA-led inspections at DPWF. No significant issues were identified as a result of these inspections. DPWF continued to maintain adequate documentation and submissions regarding the Safeguards SCA to the CNSC.

Performance rating: Satisfactory

2.4.9 Security

CNSC staff assess CNL's performance in the Security SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Security SCA which resulted in no NNCs. CNSC staff conclude that CNL has demonstrated compliance with the regulatory requirements.

Performance rating: Satisfactory

2.4.10 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2023 and reached the same conclusions:

- Human Performance Management
- Operating Performance
- Safety Analysis
- Physical Design

- Emergency Management and Fire Protection
- Packaging and Transportation

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting (Appendix E). DPWF's performance in these SCAs has remained unchanged in 2023.

Performance rating: Satisfactory

2.5 Gentilly-1 Waste Facility (G1WF)

2.5.1 Overview

- Licence: 15-year licence granted in 2019
- Licence expiry: 2034
- Licensee: Canadian Nuclear Laboratories
- Location: Bécancour, Québec

Figure 7: Gentilly-1 Waste Facility, outlined in yellow *(Source: CNL)*

The G1WF, located in Bécancour, Québec within Hydro-Québec's Gentilly-2 site, is a partially decommissioned prototype power reactor (Figure 7). The site is located on the traditional and unceded territory of the Abenaki People and the Wôbanaki Confederacy and the traditional land of the Huron-Wendat. The 250 MWe boiling water reactor was put into service in 1972 and shut down in 1984. At G1WF, CNL safely manages low- and intermediate-level radioactive wastes, as well as spent nuclear fuel in concrete dry storage canisters.

Learn more about Gentilly-1 Waste Facility

Summary of SCA performance ratings for G1WF (Appendix B)

Safety and control area	Rating
1. Management system	Satisfactory
2. Human performance management	Satisfactory

3. Operating performance	Satisfactory
4. Safety analysis	Satisfactory
5. Physical design	Satisfactory
6. Fitness for service	Satisfactory
7. Radiation protection	Satisfactory
8. Conventional health and safety	Satisfactory
9. Environmental protection	Satisfactory
10. Emergency management and fire protection	Satisfactory
11. Waste management	Satisfactory
12. Security	Satisfactory
13. Safeguards and non-proliferation	Satisfactory
14. Packaging and transport	Satisfactory

Summary of the number of inspections performed for G1WF

Type 1	Type 2	Desktop	Field	IAEA Safeguards	Number of findings*
0	1	0	0	2	4

*Number of findings is specifically related to CNSC inspections

2.5.2 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory

2.5.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into design, planning, management, and control of radiological work activities. In 2023, CNL continued to implement the corporate ALARA process at G1WF to control doses and minimize exposures.

Dose control points (DCP) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2023, no NEW's dose exceeded their assigned DCP by more than 1 mSv at G1WF.

2.5.2.2 Worker Dose Control

Radiation exposures of workers at G1WF are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. External and internal dosimetry are provided by CNL's licensed dosimetry service.

2.5.2.2.1 Nuclear Energy Workers (NEWs)

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's regulatory effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2023, the maximum effective dose received by a NEW at G1WF was 0.36 mSv, well below the CNSC's regulatory effective dose limit.

The CNSC's regulatory equivalent dose limit for NEWs is 500 mSv in a one-year dosimetry period. In 2023, the maximum skin dose received by a NEW at G1WF was 0.44 mSv, well below the CNSC's regulatory dose limit.

Data on dose to workers at G1WF from 2019 to 2023 can be found in Appendix K.

2.5.2.2.2 Non-NEWs

The CNSC's regulatory effective dose limits for persons who are not NEWs is 1 mSv in one calendar year. In 2023, persons not considered as NEWs at the G1WF received no recordable effective doses.

2.5.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the G1WF to verify that the RP program complies with CNSC's regulatory requirements. In 2023, CNSC staff conducted 1 inspection that included the Radiation Protection SCA which resulted in 1 NNC issued to CNL involving:

- missing radiation warning signage

Due to CNL's immediate actions, the NNC did not pose a risk to the health and safety of the public and the environment. CNSC staff determined that the corrective actions taken or planned to address this NNC was acceptable and the NNC was closed. CNSC staff will continue to maintain regulatory oversight.

Action levels for radiological exposures are established as part of CNL's RP program for the G1WF. If an action level is reached, it triggers CNL staff to establish the cause and, if applicable, restore the effectiveness of the RP program. In 2023, no action levels were reached at the G1WF.

2.5.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the G1WF to control and minimize radiological hazards and the spread of radioactive contamination. The radiological hazard surveys conducted in 2023 at the G1WF did not identify any adverse trends and were consistent with expected radiological conditions.

2.5.3 Environmental Protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the Open Government Portal: CNSC Open Government Portal.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, there were no inspections conducted by CNSC staff at G1WF that included the Environmental Protection SCA. Based on CNSC staff assessment of G1WF's past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at

G1WF meets the applicable regulatory requirements. A detailed summary of G1WF's Environmental Protection performance is provided below.

Performance rating: Satisfactory

2.5.3.1 Effluent and Emissions Control and Assessment and Monitoring

CNL has implemented and maintains an effluent verification monitoring program at G1WF that meets regulatory requirements. There were no regulatory or action level exceedances related to Environmental Protection in 2023.

CNSC staff reviewed G-1WF's 2023 Effluent Verification Monitoring Program (EVMP) results which indicate that:

- This facility continues to have minimal or no airborne radioactivity releases from routine operations and there were no projects at G-1WF requiring airborne effluent monitoring
- All liquids from the G-1WF sumps were transferred to the Gentilly-2 facility's effluent system to be managed and discharged by Hydro- Québec. Therefore, there were no liquid effluents discharged from the G-1WF.
- There were no regulatory limit exceedances and no spills to the environment

CNL has completed a "need-for-monitoring" assessment for airborne and waterborne emissions as part of the CSA N288.5 requirements and determined that there is no need to monitor any effluent streams at G1WF.

2.5.3.2 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including G1WF.

2.5.3.3 Environmental Risk Assessment

G1WF had an ERA that met CNSC expectations for the 2023 calendar year.

2.5.3.4 Protection of the Public

CNL performed an assessment of the need for an environmental monitoring program for the G1WF and CNSC staff reviewed and accepted the assessment. Based on CNL's assessment, there is no need for an environmental monitoring program at G1WF and CNL does not report the dose to the public for this facility.

The effluent monitoring plan assessment conducted by CNL determined that there is minimal or no source of airborne radioactivity from routine operations at G1WF. Additionally, all G1WF liquid releases are discharged through the Gentilly-2 effluent system operated by Hydro-Québec and represent a small fraction of the total releases from the larger Gentilly-2 site. Hydro-Québec's Gentilly-2 facility's environmental monitoring program captures any environmental impacts from the relatively small contribution of G1WF.

2.5.4 Conventional Health and Safety

As CNL sites are federally regulated, they are subject to the requirements of the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors work under their own health and safety programs in accordance with the Quebec Regulations, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff assess CNL's performance in the Conventional Health and Safety SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2023, CNSC staff conducted 1 inspection that included the Conventional Health and Safety SCA which resulted in 1 NNC issued to CNL:

- hazards were not identified, mitigated, and labelled appropriately

CNSC staff confirmed that CNL's immediate action plan was acceptable thus the NNC did not pose a risk to the health and safety of the public and the environment. CNSC staff concluded that the corrective actions taken to address this NNC was acceptable and closed the NNC.

Further detail on the assessment of this SCA is in the subsections below.

Performance rating: Satisfactory

2.5.4.1 Performance

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

In 2023, there were no employee RLTIs at the G1WF.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2023.

2.5.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2023.

2.5.5 Operating Performance

CNSC staff assess CNL's performance in the Operating Performance SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Operating Performance SCA which resulted in no NNCs.

Performance rating: Satisfactory

2.5.6 Fitness for Service

CNSC staff assess CNL's performance in the Fitness for Service SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Fitness for Service SCA which resulted in no NNCs.

Performance rating: Satisfactory

2.5.7 Emergency Management and Fire Protection

CNSC staff assess CNL's performance in the Emergency Management and Fire Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Emergency Management and Fire Protection SCA which resulted in 1 NNC issued to CNL. This NNC pertained to:

- fire extinguisher locations not indicated by signs or other means

The NNC did not pose a risk to the health and safety of the public and the environment. CNSC staff determined that the corrective actions taken to address this NNC was acceptable and closed the NNC.

Performance rating: Satisfactory

2.5.8 Waste Management

CNSC staff assess CNL's performance in the Waste Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Waste Management SCA. The inspection resulted in 2 NNCs issued to CNL. These NNCs pertained to:

- a compromised waste drum outside of secondary containment
- totes missing radiation signage

The NNCs did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken to address these NNCs were acceptable and closed the NNCs.

Performance rating: Satisfactory

2.5.9 Safeguards and Non-Proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events (Appendix E), and through the course of CNSC- or IAEA-led inspections (Appendix D). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including G1WF. CNSC staff accompany IAEA during their activities. In 2023, there were 2 IAEA-led inspections at G1WF. No significant issues were identified as a result of these inspections. G1WF continued to maintain adequate documentation and submissions regarding the Safeguards SCA to the CNSC.

Performance rating: Satisfactory

2.5.10 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2023 and reached the same conclusions:

- Management System
- Human Performance Management
- Safety Analysis
- Physical Design
- Security
- Packaging and Transport

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting (Appendix E). G1WF's performance in these SCAs has remained unchanged in 2023.

Performance rating: Satisfactory

2.6 Nuclear Power Demonstration Waste Facility (NPDWF)

2.6.1 Overview

- Licence: 15-year licence granted in 2019
- Licence expiry: 2034
- Licensee: Canadian Nuclear Laboratories
- Location: Rolphton, Ontario

Figure 8: Nuclear Power Demonstration Waste Facility *(Source: CNL)*

The NPDWF is a partially decommissioned prototype power reactor located in Rolphton, Ontario (Figure 8) on the traditional unceded territory of the Algonquin Anishinaabeg Peoples. The 20 MWe prototype CANDU power reactor was placed into service in 1962 and operated until 1987. At NPDWF, CNL safely manages low- and intermediate-level radioactive wastes. Additionally, CNL is undertaking decommissioning planning activities.

Learn more about Nuclear Power Demonstration Waste Facility

CNL continues to work on the proposal to modify the decommissioning approach for NPDWF from full dismantling to in-situ decommissioning. This application is under review by CNSC staff and is subject to both an EA pursuant to CEAA, 2012 [12] and a licence amendment. CNL's proposal will be the subject of future Commission decisions on the EA and licence amendment, and as such, it will not be discussed in this report.

Summary of SCA performance ratings for NPDWF (Appendix B)

Safety and control area	Rating
1. Management system	Satisfactory
2. Human performance management	Satisfactory
3. Operating performance	Satisfactory
4. Safety analysis	Satisfactory
5. Physical design	Satisfactory

6. Fitness for service	Satisfactory
7. Radiation protection	Satisfactory
8. Conventional health and safety	Satisfactory
9. Environmental protection	Satisfactory
10. Emergency management and fire protection	Satisfactory
11. Waste management	Satisfactory
12. Security	Satisfactory
13. Safeguards and non-proliferation	N/A
14. Packaging and transport	Satisfactory

Summary of the number of inspections performed for NPDWF

Type 1	Type 2	Desktop	Field	IAEA Safeguards	Number of findings*
0	1	0	1	N/A	2

*Number of findings is specifically related to CNSC inspections

2.6.2 Radiation Protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory

2.6.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into design, planning, management, and control of radiological work activities. In 2023, CNL continued to implement the corporate ALARA process at NPDWF to control doses and minimize exposures.

Dose control points (DCP) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2023, no NEW's dose exceeded their assigned DCP by more than 1 mSv at NPDWF.

2.6.2.2 Worker Dose Control

Radiation exposures of workers at NPDWF are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. External and internal dosimetry are provided by CNL's licensed dosimetry service.

2.6.2.2.1 Nuclear Energy Workers (NEWs)

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's regulatory effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2023, the maximum effective dose received by a NEW at NPDWF was 0.02 mSv, well below the CNSC's regulatory effective dose limit.

The CNSC's regulatory equivalent dose limit for NEWs is 500 mSv in a one-year dosimetry period. In 2023, the maximum skin dose received by a NEW at NPDWF was 0.02 mSv, well below the CNSC's regulatory dose limit.

Data on dose to workers at NPDWF from 2019 to 2023 can be found in Appendix K.

2.6.2.2.2 Non-NEWs

The CNSC's regulatory effective dose limits for persons who are not NEWs is 1 mSv in one calendar year. In 2023, persons not considered as NEWs at the NPDWF received no recordable effective doses.

2.6.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the NPDWF to verify that the RP program complies with CNSC's regulatory requirements. In 2023, CNSC staff conducted 2 inspections conducted by CNSC staff that included the Radiation Protection SCA which resulted 1 NNC issued to CNL. This NNC pertained to:

- emergency responders not wearing issued dosimeters

CNSC staff determined that CNL's immediate action plan was acceptable and the NNC did not pose a risk to the health and safety of the public and the environment. CNSC staff determined that the corrective actions taken to address this NNC was acceptable and closed the NNC.

Action levels for radiological exposures are established as part of CNL's RP program for the NPDWF. If an action level is reached, it triggers CNL staff to establish the cause and, if applicable, restore the effectiveness of the RP program. In 2023, no action levels were reached at the NPDWF.

2.6.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the NPDWF to control and minimize radiological hazards and the spread of radioactive contamination. The radiological hazard surveys conducted in 2023 at the NPDWF did not identify any adverse trends and were consistent with expected radiological conditions.

2.6.3 Environmental Protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the Open Government Portal: CNSC Open Government Portal.

CNSC staff assess CNL's performance in the Radiation Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Environmental Protection SCA. No NNCs were issued as a result of the inspection.

Based on CNSC staff assessment of NPDWF's effluent and environmental monitoring results, past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at NPDWF met the applicable regulatory requirements. A detailed summary of NPDWF's Environmental Protection performance is provided below.

Performance rating: Satisfactory

2.6.3.1 Effluent and Emissions Control and Assessment and Monitoring

CNL has implemented and maintains an effluent verification monitoring program at NPDWF that meets regulatory requirements. There were no regulatory or action level exceedances related to Environmental Protection in 2023.

CNSC staff reviewed NPDWF's 2023 Effluent Verification Monitoring Program (EVMP) results which indicate that:

- Airborne and liquid releases remained well below their regulatory release limits and DRLs (tritium and gross beta releases to air were less than <0.01% of their DRL; tritium and gross beta releases in liquid effluent were less than <0.01% of their DRL)
- There were no regulatory limit exceedances and no spills to the environment

CNL collects liquid effluent, both radiological and hazardous, to the environment from the Wells Area Sump in NPDWF and ships it to CRL for treatment prior to release.

2.6.3.2 Environmental Management System

CNL has established its corporate level Environmental Management System (EMS) which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including NPDWF.

2.6.3.3 Environmental Risk Assessment

In 2023, CNSC staff performed a gap analysis of CNL's NPDWF ERA documentation against requirements in REGDOC 2.9.1, *Environmental Principles, Assessments and Protection Measures* [11] and CSA N288.6-12, *Environmental risk assessments at nuclear facilities and uranium mines and mills* [4]. Following the review, CNSC staff identified gaps regarding formal documentation of a human health risk assessment for hazardous substances as well as an ecological risk assessment for the current storage-with-surveillance state of the facility. CNL will provide an updated ERA for CNSC staff's review.

2.6.3.4 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

As NPDWF no longer discharges liquid effluents from the Wells Areas Sump, and as all other releases of radioactive material in NPDWF effluents are a small fraction of their respective

regulatory limits, it is CNSC staff's conclusion that the potential of impact on the public or the environment is minimal.

2.6.4 Conventional Health and Safety

As CNL sites are federally regulated, they are subject to the requirements of the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the *Canada Labour Code* [5] and *Canada Occupational Health and Safety Regulations* [6]. A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors work under their own health and safety programs in accordance with the Ontario Regulations, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff assess CNL's performance in the Conventional Health and Safety SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). These compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2023, CNSC staff conducted 1 inspection that included the Conventional Health and Safety SCA which resulted in no NNCs.

Further detail on the assessment of this SCA is in the subsections below.

Performance rating: Satisfactory

2.6.4.1 Performance

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked. Data on number, frequency, and severity of RLTI from 2019 to 2023 are included in Appendix J.

In 2023, there were no employee RLTIs at the NPDWF.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2023.

2.6.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2023.

2.6.5 Operating Performance

CNSC staff assess CNL's performance in the Operating Performance SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Operating Performance SCA which resulted in no NNCs.

Performance rating: Satisfactory

2.6.6 Emergency Management and Fire Protection

CNSC staff assess CNL's performance in the Emergency Management and Fire Protection SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 2 inspections that included the Emergency Management and Fire Protection SCA which resulted in 1 NNC issued to CNL. This NNC pertained to:

- two fire doors were missing self-closure mechanisms

The NNC did not pose a risk to the health and safety of the public and the environment. CNSC staff determined that the corrective actions taken to address this NNC was acceptable and closed the NNC.

Performance rating: Satisfactory

2.6.7 Waste Management

CNSC staff assess CNL's performance in the Waste Management SCA through desktop reviews, reportable events (Appendix E), and through the course of inspections (Appendix D). In 2023, CNSC staff conducted 1 inspection that included the Waste Management SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory

2.6.8 Safeguards and Non-Proliferation

Since this facility is in a partially decommissioned state, the Safeguards SCA is not applicable to the NPDWF site. Therefore, no safeguards and non-proliferation activities occurred in 2023.

2.6.9 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2023 and reached the same conclusions:

- Management System
- Human Performance Management
- Safety Analysis
- Physical Design
- Fitness for Service
- Security
- Packaging and Transportation

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting (Appendix E). NPDWF's performance in these SCAs has remained unchanged in 2023.

Performance rating: Satisfactory

3 Consultation, Engagement and Public Disclosure

3.1 Indigenous Consultation and Engagement

The common-law duty to consult with Indigenous Nations and communities applies when the Crown contemplates actions that may adversely affect potential or established Indigenous and/or treaty rights. The CNSC ensures that licence decisions under the NSCA uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982* [13].

The CNSC is committed to building long-term relationships and conducting ongoing engagement with Indigenous Nations and communities who have an interest in CNSC-regulated facilities within their traditional and/or treaty territories. The CNSC's ongoing Indigenous engagement practices include:

- Sharing information and discussing topics of interest with Indigenous Nations and communities
- Seeking feedback and input on CNSC processes
- Responding to issues and concerns
- Collaborating and two-way dialogue on an ongoing basis
- Collaborating on drafting relevant sections of CNSC reports
- Providing opportunities to participate in environmental monitoring through the CNSC's Independent Environmental Monitoring Program (IEMP)
- Funding opportunities through the CNSC's Participant Funding Program (PFP) to support participation in Commission proceedings and ongoing regulatory activities and build knowledge and capacity through the CNSC's Indigenous and Stakeholder Capacity Fund

CNL's sites and facilities fall within the traditional and treaty territories of many Indigenous Nations and communities, as listed in Appendix H.

CNSC staff's efforts in 2023 supported the CNSC's ongoing commitment to meet its consultation and engagement obligations and build positive relationships with Indigenous peoples with interests in Canadian Nuclear Laboratories sites and facilities. CNSC staff continued to work with Indigenous Nations, communities, and organizations to identify opportunities for formalized and regular engagement throughout the lifecycle of these facilities and welcomed the opportunity to meet with Indigenous Nations and communities to discuss and address topics of interest or concern.

3.1.1 CNSC Engagement and Consultation Efforts

In 2023, CNSC staff efforts in relation to CNL sites were largely focused on consultation activities for the ongoing environmental assessments (EAs) and licensing decision for the then proposed Near Surface Disposal Facility Project and the proposed Nuclear Power Demonstration Decommissioning Project. Indigenous Nations and communities were also provided updates on ongoing licensed activities at the Douglas Point Waste Facility, Whiteshell Laboratories, Gentilly-1, Port Hope Project and Chalk River Laboratories sites.

CNSC staff ensure that all Indigenous Nations and communities with a potential interest in CNL's sites, facilities, and activities, are aware of the CNL ROR process and how they can get involved. As was done in 2022, the CNSC continued to hold an annual CNL ROR virtual engagement session with Indigenous Nations and communities on September 12th, 2023. There were 17 participants representing approximately 10 Indigenous Nations, communities, and organizations with an interest in CNL sites and the ROR. The goal of the engagement session was to provide an overview of the ROR, CNSC staff's findings with regards to CNL's performance in 2022 as well as discussing and addressing feedback, concerns, comments and recommendations submitted by interested Nations and communities in relation to the 2022 CNL ROR. CNSC staff appreciated the feedback and discussions and worked to include and reflect a number of the recommendations in the 2023 CNL ROR (Appendix G). Based on the continued success of these virtual engagement sessions, CNSC staff plan to host another CNL ROR engagement session for the 2023 ROR in September 2024.

3.1.2 CNSC Communications with Indigenous Nations and Communities

In addition to the outreach and engagement sessions, CNSC staff ensure that all interested Indigenous Nations and communities are made aware of the opportunities to review the ROR and submit interventions to the Commission, including the opportunity to intervene orally, as well as opportunities to receive funding through the CNSC's PFP to support their participation in the process. CNSC staff continued to keep Indigenous Nations and communities up to date and informed with regards to CNSC staff's regulatory oversight activities at CNL sites including specific meetings on topics of interest, ongoing discussions with regards to responding to and addressing issues, concerns and recommendations raised in their interventions to the Commission. In 2023, CNSC staff followed up with each Indigenous Nation and community who intervened with regards to the 2022 CNL ROR and offered to have focused meetings and discussions to address their concerns, comments and recommendations. In response to concerns raised by Indigenous Nations and Communities, CNSC staff has committed to taking the following actions to continue to improve the CNL ROR:

- Provide more detailed event descriptions for reportable events
- Provide additional information on notices of non-compliance arising from inspections
- Include details on the CNSC's oversight strategy on climate change resiliency
- Include an annex summarizing the issues, concerns and requests, and the status of the CNSC's responses/work to address them from intervenors from last year's ROR, including Indigenous Nations and Communities
- Continue working with Indigenous Nations and Communities to address their recommendations in their interventions on the 2022 CNL ROR
- Collaborate with Indigenous Nations and communities whom the CNSC has a Terms of Reference for long-term engagement with drafting summaries of engagement activities
- Collaborate with Indigenous Nations and communities on summarizing their feedback and perspectives on engagement with CNL in 2023

For more information on the Terms of Reference (ToR) engagement and consultation summaries and each Nation's perspective on CNSC staff's and CNL's engagement during 2023, please see Appendix I and the Section 3.1.6 on CNL's engagement activities in 2022.

3.1.3 Issues and Concerns Tracking

In direct response to the Commission's action following the presentation of the 2021 RORs, CNSC staff have established issues and concerns tracking tables for each Indigenous Nation or Community who intervenes in CNSC regulatory processes, including RORs.

These tables capture the requests, concerns and comments included in the interventions in relation to each ROR, or other Commission proceedings as appropriate, from each Indigenous Nation and community. CNSC staff's responses and proposed actions are also included, as appropriate. The tracking tables are shared with each Indigenous Nation and community for validation and discussion in order to make progress on addressing their requests and concerns collaboratively.

CNSC staff have included Appendix G which provides an overview of issues, concerns and recommendations submitted via intervention by each Indigenous Nation and community. The information presented in Appendix G is derived from interventions submitted specifically for the 2022 ROR. These conversations carried forward and continued into 2023.

In 2023, CNSC staff followed up with each Indigenous Nation and community who intervened with regards to the 2022 CNL ROR and offered to have specific meetings and discussions to address their concerns, comments and recommendations. For Indigenous Nations and communities who have a ToR with CNSC, requests, concerns and comments raised in the ROR were further discussed in agreed-upon regular meetings.

CNSC staff have formalized 10 Terms of Reference for long-term engagement with interested Indigenous Nations and communities which have been collaboratively developed with each interested Indigenous Nation or community. A summary of the engagement activities that occurred in 2023 in relation to each of the existing ToRs for long-term engagement is included in Appendix I. These summaries were collaboratively drafted between CNSC staff and each respective Indigenous Nation or community.

In 2023, the CNSC developed and finalized a ToR for long-term engagement with Hiawatha First Nation. This is in addition to existing ToRs with Indigenous Nations and communities with an interest in CNL sites and activities which include: Algonquins of Pikwàkanagàn First Nation, Kebaowek First Nation, Curve Lake First Nation, the Mississaugas of Scugog Island, the Saugeen Ojibway Nation, the Metis Nation of Ontario and the Historic Saugeen Metis. CNSC staff are working on developing and finalizing a number of other ToRs in the coming years with interested Indigenous Nations and communities. CNSC staff remain open to developing ToRs for long-term engagement with other Indigenous Nations and communities interested in CNL sites as appropriate.

3.1.4 Engagement on Monitoring Activities

In 2023, CNSC staff have continued to engage and collaborate with Indigenous Nations and communities on the CNSC's Independent Environmental Monitoring Program (IEMP). CNSC staff have made it a priority to ensure that IEMP sampling reflects Indigenous Knowledge, land use, and values, where possible. In addition to IEMP sampling activities, CNSC staff sought input from Indigenous Nations and communities in the 2023 IEMP sampling plans and participating in the sampling process in person alongside CNSC staff.

In advance of the 2023 IEMP sampling campaign around the NPD and Gentilly sites, notification emails were sent to Indigenous Nations and communities near the facilities to notify them of the sampling campaigns and to seek input on the applicable sampling plans. CNSC staff invited each interested Nation and community to provide and share Indigenous Knowledge, as well as suggestions for species of interest, valued components, and potential sampling locations where traditional practices and activities may take place.

Representatives from the Algonquins of Pikwàkanagàn First Nation, and Algonquins of Ontario joined the sampling team around the NPD site for sampling activities in July 2023; representatives from Wôlinak First Nation joined the sampling team around the Gentilly site for sampling activities in August 2023. CNSC awarded funding through the Indigenous and Stakeholder Capacity Fund (ISCF) to each participating Indigenous Nation and community to support these collaborative efforts on the 2023 IEMP.

As part of the sampling field work, CNSC staff and the participating Indigenous Nations and communities discussed the IEMP in more detail and related aspects of the CNSC's

Environmental Protection Framework. The CNSC's sampling team demonstrated sampling techniques as well as packaging and chain of custody procedures. Participants helped to gather samples of water, soil, sand and vegetation. CNSC staff truly appreciated the engagement, input and participation by the Indigenous Nations and communities in the NPD and Gentilly sampling campaigns and look forward to future collaboration on the IEMP and other sampling initiatives. Once the results are available for each of the sampling campaigns, CNSC staff will work with each Indigenous Nation and community to communicate the results to their respective leadership and community members, including collaboration on easy-to-read results cards that can be shared with community members. The CNSC is committed to continuing to engage with interested Indigenous Nations and communities with regards to the IEMP, to ensure that sampling plans and activities are reflective of and incorporates Indigenous Knowledge, values and perspectives.

In 2023, CNSC and ECCC engaged with participating Indigenous Nations and communities and Environmental Non-Government Organizations (ENGOs) in Phase 1 of the Regional Information and Monitoring Network for the Ottawa River Watershed (RIMNet) Initiative. The Regional Information and Monitoring Network related to the Environmental and Nuclear Activities in the Ottawa River Watershed Basin (RIMNet) is an initiative led by Environment and Climate Change Canada and the CNSC to improve information sharing and documentation regarding the environmental aspects of past, existing and proposed nuclear facilities in the Ottawa River Watershed Basin. RIMNet aims to improve understanding of environmental effects, including cumulative effects of past, existing and proposed nuclear facilities.

The Algonquins of Pikwàkanagàn First Nation, Kebaowek First Nation, Kitigan Zibi Anishinabeg, and Ottawa Riverkeeper have been engaging with CNSC and Environment and Climate Change Canada Staff to share knowledge, perspectives and priorities in relation to the RIMNet initiative. Participants met with CNSC and ECCC quarterly to receive updates on data collection and analysis, review of the draft Phase 1 Report, which included contributing to sections of the report where they may have interests and concerns, as well as share resources and/or Indigenous Knowledge, as appropriate. CNSC and ECCC are engaging with participants at all stages of Phase 1 of RIMNet to ensure a collaborative process and look forward to further collaboration in future phases of the initiative.

3.1.5 CNSC Terms of Reference for Long-Term Engagement with Indigenous Nations and communities

CNSC staff have formalized long-term engagement relationships with interested Indigenous Nations and communities through Terms of Reference (ToR) collaboratively developed with each Nation or community. The ToRs and associated work plans, include regular meetings, an accountability and governance structure, specific collaborative activities, as well as topics,

facilities, sites, and projects of interest. A summary of the engagement activities that occurred in 2023 in relation to each of the existing ToRs for long-term engagement with these Nations and communities was collaboratively drafted and signed by CNSC and each respective Indigenous Nation or community and can be found in Appendix I. The CNSC has developed and finalized ToRs for long-term engagement with the following Indigenous Nations and communities with an interest in CNL sites and activities:

- the Algonquins of Pikwàkanagàn First Nation
- Mississaugas of Scugog Island First Nation
- Kebaowek First Nation
- Curve Lake First Nation
- Hiawatha First Nation
- Saugeen Ojibway Nation
- Métis Nation of Ontario
- Historic Saugeen Métis

The CNSC is also working on developing a number of other ToRs in the coming years with interested Indigenous Nations and communities. CNSC staff remain open to developing ToRs for long-term engagement with other interested Nations and communities with nuclear facilities in their territories upon request.

3.1.6 CNL Engagement Activities

Overall, CNSC staff are satisfied with the level and quality of Indigenous engagement activities conducted by CNL in relation to their operations and proposed projects at different sites in 2023. CNSC staff have confirmed that CNL has Indigenous engagement and outreach programs and is undertaking internal initiatives such as launching their Indigenous Vendor Portal and the Indigenous Business Network in 2023. CNSC staff encourage CNL to continue to remain flexible and responsive to the requests and needs of the Indigenous Nations and communities that have an interest in their sites, facilities and proposed projects.

For more details on CNL's engagement activities, see the subsections below.

3.1.6.1 Chalk River Laboratories

For the Chalk River Laboratories site, CNL continued to work on long-term relationship agreements in 2023. CNL has a Memorandum of Understanding (MOU) with the Algonquins of Ontario as well as an MOU with the Métis Nation of Ontario (MNO) Regions 5 and 6. CNL is also in the process of working on an MOU and Contribution Agreement with Kebaowek First Nation. as well as with Kitigan Zibi Anishinabeg. CNL is working to amend a Contribution Agreement with Curve Lake First Nation (CLFN) to go until 2024 and is working to establish a Contribution

Agreement with Hiawatha First Nation. CNL and the Algonquins of Pikwàkanagàn First Nation (AOPFN) established a Guardian Program and a long-term relationship agreement. The MNO and AOPFN are also involved in CNL's public Environmental Stewardship Council, and Kitigan Zibi Anishinabeg (KZA) and Kebaowek First Nation (KFN) representatives have attended (ESC) meetings. CNL continued engagement with KZA and KFN to continue to build their relationships and continued monthly meetings with the Williams Treaties First Nations. CNL has noted that Indigenous Nations and communities expressed interest in biodiversity and cultural heritage studies, as well as future site use at CRL. In response, CNL conducted several engagement activities including collaborative monitoring, site tours, subject-specific meetings and inviting interested Indigenous community members to participate in archaeological assessment field studies at CRL.

3.1.6.2 Whiteshell Laboratories

In 2021, CNL shifted its approach to engaging with interested First Nations and the Red River Métis (represented by the Manitoba Metis Federation (MMF)) in the vicinity of the Whiteshell Laboratories (WL) site to be more relationship-based than solely project-focused. This work carried on into 2023. CNL continued to work to establish relationship agreements with key Indigenous Nations and communities. In 2023, CNL worked with Sagkeeng Anicinabe First Nation, and the established community liaison officer, met with Chief and Council, provided site tours, renewed the Technical Working Group and supported the development of an independent Community Environmental Monitoring Program, Niigan Aki, which was launched in December 2022. In 2023, MMF participated in or observed many CNL environmental monitoring and other site activities, received updates on ongoing WL decommissioning activities, and signed a relationship agreement with CNL. In 2023, CNL made efforts to host Black River First Nation and Hollow Water First Nation on site for a tour and to participate in environmental monitoring, had meetings with CNL and the Core Engagement team and extended the existing relationship agreement. CNL also continued to discuss land use and end state with each of the interested Indigenous Nations and communities, including hosting a land use and end state conference in Brokenhead Ojibway Nation.

3.1.6.3 Port Hope Area Initiative

In 2023, CNL continued engaging with the Williams Treaties First Nations (WTFN) regarding the Port Hope Area Initiative (PHAI), which is located in their shared traditional and treaty territory, as well as other Indigenous Nations and communities with interests in the PHAI, such as the Mohawks of the Bay of Quinte, the Anishinabek Nation, and the Métis Nation of Ontario Regions 6 & 8. CNL's Indigenous engagement staff met monthly with representatives from the WTFN, as well as bilateral meetings with Indigenous Nations and communities on request to

discuss topics of interest such as CNL's environmental remediation activities, vegetation surveys, archaeological excavation, fish relocation, and CNL's anticipated proposal to amend the PHAI licence to chance the cleanup criteria for arsenic. CNL engaged with Indigenous Nations and communities in a variety of ways, including in-person meetings, virtual meetings and webinars, presentations, attendance at community events, cultural awareness trainings, and site tours. Adapting to feedback from the Williams Treaties First Nations over the course of 2023, CNL has moved away from monthly meetings with all WTFN representatives, towards quarterly meetings with all WTFN representatives while still offering monthly bilateral meetings to Indigenous Nations and communities upon request.

CNL continues to hold an active Contribution Agreement with Curve Lake First Nation and Hiawatha First Nation and remains open to negotiating similar PHAI-related agreements with other Indigenous communities.

3.1.6.4 Douglas Point Waste Facility

For the Douglas Point Waste Facility (DPWF) in 2023, CNL continued to focus on relationship-building with Indigenous Nations and communities, and engagement on decommissioning activities. CNL supports engagement with the Saugeen Ojibway Nation (SON), on whose Treaty and traditional territory the DPWF is located, through a contribution agreement. CNL also engaged with the Historic Saugeen Metis (HSM) and the Metis Nation of Ontario (MNO) Region 7, on whose traditional harvesting territory the DPWF is located, as well as the Chippewas of Kettle and Stony Point First Nation. CNL has hosted virtual and in-person meetings, shared draft plans and documents for input, provided project updates, attended community events, hosted site tours, and attended walking tours with Indigenous Nations and communities. CNL has heard and responded to questions about the fuel transfer process as well as groundwater monitoring at the DPWF.

3.1.6.5 Gentilly-1 Waste Facility

CNL held a meeting in 2023 with the Wôbanaki Nation and attended community events in Odanak and Wôlinak. CNL also met with the Huronne-Wendat Nation in the fall of 2023. CNL's engagement in 2023 regarding the G-1 facility focused on their plans to apply for a licence amendment to proceed with active decommissioning, and waste consolidation project. CNL has indicated its intention to share further information and seek feedback from interested Indigenous Nations and communities with respect to Gentilly-1 over 2023, and has noted that they are planning activities for engagement and relationship building with implicated or interested Indigenous Nations and communities.

3.1.6.6 Nuclear Power Demonstration Closure Project

For the Nuclear Power Demonstration Closure Project, CNL continued to work on long-term relationship agreements in 2023. CNL and Atomic Energy of Canada signed a long-term relationship agreement with the Alongquins of Pikwàkanagàn. CNL continues to work with the Metis Nation of Ontario on developing an LTRA. CNL worked with Nations including the Metis Nation of Ontario (Regions 5 and 6), the Algonquins of Pikwàkanagàn First Nation (AOPFN), Kitigan Zibi Anishinabeg (KZA), the Algonquins of Ontario (AOO), Kebaowek First Nation (KFN), and the Williams treaty First Nations (WTFN) to provide an opportunity to review the draft Environmental Impact Statement (EIS), to incorporate each Nation's comments, and to validate changes to the EIS. CNL met monthly with AOPFN, AOO, KFN, MNO, and WTFN, and established monthly meetings with KZA in April 2023. CNL's EIS is still in development with opportunity for CNL to engage on Indigenous Nations and communities on the content.

AOPFN community members participated in a bus tour of the CRL site, and visited NPD for the spring inventory. KFN and AOO also participated in site visits.

CNL hosted a series of virtual Lunch n' Learn sessions for employees at CNL sites on Indigenous Knowledge on Sustainability as part of Earth week celebrations. CNL heard from Elders of the Williams Treaties First Nations (Hiawatha FN and Curve Lake FN), as well as Sagkeeng Anicinabe FN. CNL also hosted in-person chimney swift night count events, and offered private invitations for dedicated nights to AOPFN, KFN, and CLFN.

3.2 Public Consultation and Engagement

The NSCA mandates the CNSC to disseminate objective scientific, technical and regulatory information to the public concerning its activities and the activities it regulates. CNSC staff fulfill this mandate in a variety of ways, including hosting in-person and virtual information sessions and through annual regulatory reports. Additionally, CNSC staff have responded to or provide CNSC staff's path forward to address and close out specific requests, concerns, and comments raised by Indigenous Nations or communities and intervenors who raised issues or concerns in relation to the 2022 CNL ROR. More details can be found in Table G1 in Appendix G of this report.

CNSC staff carried out several outreach activities in 2023. Most activities were generic in nature, where CNSC staff were able to engage local community members with information on the role of the nuclear regulator in Canada and the CNSC's oversight of the various CNL sites. Some of these activities were targeted to specific regulatory review and licensing processes underway, including the NSDF, the Global First Power (GFP) Micro Modular Reactor (MMR) environmental assessment and licensing proposals, and the PHAI. CNSC staff were also invited by Sagkeeng First Nation (SFN) to attend the Treaty Days celebration and had an information

booth at the event to support engagement and relationship building with community members, and to provide information on the CNSC's role and nuclear activities in SFN's territory.

3.3 Licensee Public Information and Disclosure

A Public Information and Disclosure Program (PIDP) is a regulatory requirement for licence applicants and licensees of Class I nuclear facilities, uranium mines and mills and certain Class II nuclear facilities. These requirements are clarified in REGDOC-3.2.1, *Public Information and Disclosure* [14].

The primary goal of the PIDP is to ensure that information related to the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities are effectively communicated to the public. The program must include a commitment to, and protocol for ongoing, timely communication of information related to the licensed facility during the course of the licence period.

CNSC's expectations of a licensee's public information program and disclosure protocol are commensurate with the level of risk of the facility, as well as the level of public interest in the licensed activities. The program and protocol may be further influenced by the complexity of the nuclear facility's lifecycle and activities, and the risks to public health and safety and the environment perceived to be associated with the facility and activities.

CNL's PIDP is a fleet-wide program which covers all licenced nuclear facilities including WL, PHAI, CRL, NPDWF, DP, and G-1. CNSC staff monitor CNL's implementation of its PIDP to verify that it communicates regularly with its audiences in a way that is open, transparent, and meaningful to them. CNSC staff also review yearly program updates to verify CNL is taking the community's feedback into consideration and is taking steps to implement program adjustments to meet the evolving needs of the various communities.

In 2023, CNL successfully maintained its PIDP, engaging with their many stakeholders both in person and virtually.

Communications activities conducted by CNL included:

- Regularly updating its website with information on each facility/site/project and posting its public disclosure protocol and reportable events, including four public disclosures through Community Information Bulletins
- Posting and engaging with audiences on social media, providing information about each facility/site/project
- Providing information including descriptions of current and upcoming work, environmental monitoring reports, project newsletters, Public Disclosures and the Complaint Resolution Program, and the Property Value Protection Program
- Advertising on social media, and in both local and national media outlets

- Sending out information externally to local communities and interested stakeholders via factsheets, newsletters (mailout and online), as well as internally to CNL employees
- Developing and publishing the 2023 CNL Sustainability Report on the website
- Hosting and participating in events, including: open houses, council meetings, career fairs, school presentations, public information sessions, national and international conferences and tradeshows, and webinars. Events included those to acknowledge and celebrate indigenous peoples, and to encourage and promote youth and women in STEM.
- Conducting sitewide tours at various facilities/sites for local communities, school groups, interested stakeholders and media as requested
- Conducting surveys and publishing results online, including documents available upon request
- Analysing the various communication channels, providing further insight into public opinion and the effectiveness of the PIDP regarding CNL and the operations
- Engaging consistently and in a timely manner with local and national media, both proactively and in response to requests on topics of public interest. In 2023, CNL produced 33 news releases.

In 2023, CNSC held a third Commission Hearing on the NSDF, and leading up to the decision in 2024; the proposed NSDF and the hearing was a popular topic of media interest. CNL provided specific examples of NSDF communication and engagement activities to the CNSC to demonstrate the licensee's PIDP compliance.

Other key topics of media interest in 2023 included: Whiteshell work stoppage, targeted alpha therapy, small modular reactors, and the CRL site revitalization.

In December 2023, CNL advised the CNSC of a revision to the PHAI Phase 2 and Phase 3 PIDP. There was also an update to the PHAI social media plan to encourage public interaction with CNL Port Hope online and PHAI reported a notable increase in engagement on Facebook, LinkedIn and Instagram.

Public engagement activities for WL included a focus on the WL Restoration Project, and the ongoing environmental assessment for the decommissioning of the WR-1 reactor. CNL also provided public updates on the WL safety stand down using public disclosures and emails to surrounding communities.

In 2023, CNL demonstrated a strong commitment to disseminating appropriate and timely information to the public and community members. CNSC staff found that all CNL sites and facilities followed applicable public information program requirements. CNL distinctly communicates about current projects and is encouraged to continue to do so as those projects evolve.

3.4 Participant Funding Program

The CNSC established the Participant Funding Program (PFP) in 2011 to:

1. enhance individual, not-for-profit organization and Indigenous Nations and Communities participation in the CNSC's environmental assessment (EA) and licensing processes for major nuclear facilities (e.g., uranium mines, nuclear power plants, nuclear substance processing, or nuclear waste facilities)
2. assist individuals, not-for-profit organizations and Indigenous Nations and Communities to bring value-added information to the Commission through informed and topic-specific interventions related to EAs and licensing (i.e., new, distinctive and relevant information that contributes to a better understanding of the anticipated effects of a project)

CNSC awarded approximately $90,256.20 in participant funding to assist Indigenous peoples, members of the public and stakeholders in reviewing this ROR and submitting comments to the Commission, as detailed in Appendix L.

4 Other Matters of Regulatory Interest

4.1 Reportable Events

Detailed requirements for reporting unplanned situations or events at CNL licensed sites to the CNSC are referenced in the applicable licence condition handbooks (LCHs). CNSC's REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills* [15] was implemented for applicable CNL sites with the exception of the PHAI. CNSC's REGDOC-3.1.3, *Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices* [16] was implemented for the PHAI. Over the period covered by this report, CNL has complied with the requirements for submission of these reports.

Appendix E provides a list and a brief description of the reportable events which occurred in 2023. These events are of low safety significance and CNSC staff are satisfied with CNL's corrective actions to prevent recurrence.

Events which CNSC staff assess as meeting specific risk criteria are the subject of "Event Initial Reports" from CNSC staff to the Commission. In 2023, there was one Event Initial Report, which was presented to the Commission on June 28, 2023:

- Deficiencies identified by CNL during a self-assessment of Whiteshell Laboratories' (WL) Fire Protection Program presented to the Commission in CMD 23-M25 [17]. On April 27, 2023, CNL contacted the Duty Officer to report that training records for member of the on-site fire brigade were incomplete and thus CNL could not demonstrate adequate training for fire response staff. On May 19, 2023, CNL provided the full event report, identifying additional deficiencies with the fire protection program linked to training, availability and maintenance of personal protective equipment, inspection and maintenance of fire extinguishers, the conduct of drills, and the supply of firewater. Following the event, CNL took immediate action, including:
  - put the site into a safe stand down state
  - released a public statement
  - reduced the likelihood of a fire
  - received temporary replacements to deficient equipment
  - staffed the site with qualified firefighters from another CNL site
  - began supplementary training
- CNSC staff have and are continuing to review CNL's progression and implementation of corrective actions through its Multi-Phase Restart plan for the WL site to return to normal operations, which CNSC staff have reviewed and accepted. CNSC staff observed additional findings through an EMFP reactive inspection conducted in August 2023 which resulted in

10 NNCs issues to CNL. Therefore, on October 13, 2023, a CNSC Designated Officer subsequently issued an Administrative Monetary Penalty of $14,856 to CNL. CNSC staff are developing a targeted compliance plan to supplement the baseline plan to verify that CNL's corrective actions to the WL FPP and other related programs are satisfactorily implemented with effective results.

4.2 Independent Environmental Monitoring Program (IEMP)

The CNSC requires each nuclear facility licensee to develop, implement and maintain an environmental monitoring program as appropriate to demonstrate that the public and the environment are protected from any releases to the environment related to the facility's nuclear activities. CNSC staff evaluate and assess the results from these monitoring programs to determine compliance with applicable requirements and limits, as set out in the regulations that govern Canada's nuclear industry.

The Independent Environmental Monitoring Program (IEMP) is independent from a licensee's technical environmental sampling program and is carried out by CNSC staff in publicly accessible areas around nuclear facilities. The CNSC continues to strive to build Indigenous and public trust in the CNSC's regulation of the nuclear industry and has implemented the IEMP to confirm the effectiveness of a licensee's monitoring program and to promote more awareness and information sharing of CNSC's work to protect people and the environment. The IEMP is a regulatory tool that complements and informs the CNSC's ongoing compliance verification program and does not rely on licensees to provide samples. CNSC staff and independent contractors obtain samples from publicly accessible areas around nuclear facilities, measure the amounts of radiological nuclear and hazardous substances present, and then report these amounts to the Commission, Indigenous Nations and communities, and the public.

In 2023, CNSC staff conducted IEMP sampling around the following CNL sites: G-1, NPD, and PHAI. There were no results of concern, despite one sediment sample from PHAI that had an arsenic level slightly above the CCME's interim sediment quality guideline. This arsenic result was not unexpected due to historical releases from the Welcome Waste Management Facility. There were no adverse effects from this arsenic level since guideline values are set well below levels that are expected to cause effects to the environment or to people's health. Additionally, the arsenic levels in the environment are expected to improve following remediation and commissioning of the LTWMF and WWTP. Overall, the 2023 IEMP results were consistent with those submitted by CNL as part of their environmental monitoring programs. The IEMP results support CNSC staff's assessment that the public and the environment in the vicinity of these facilities are protected and that CNL's environmental protection programs are effective.

Results from all IEMP sampling campaigns are available on the CNSC's Web page

4.3 Near Surface Disposal Facility (NSDF)

In March 2017, CNL applied to the CNSC for an amendment to its licence for CRL to authorize the construction of a new Class IB nuclear facility – the near surface disposal facility (NSDF) at the CRL site. The NSDF Project will provide a permanent disposal solution for up to 1 million cubic metres of solid low-level radioactive waste, the majority of which is currently in storage at the CRL site or will be generated from environmental remediation, decommissioning, and operational activities at the CRL site. Approximately 10% of the waste volume will come from other AECL-owned sites or from commercial sources such as Canadian hospitals and universities. The NSDF Project includes an engineered containment mound, a wastewater treatment plant, and other support facilities and site infrastructure. On January 9, 2024, the CNSC announced the Commission's decision to amend CNL's nuclear research and test establishment operating licence for CRL to authorize the construction of the NSDF at CRL.

Read the full record of decision from the Commission

CNSC staff are responsible for providing ongoing oversight of this project and for ensuring that CNL meets regulatory and safety requirements as it moves forward with construction of the NSDF. This includes ongoing engagement and consultation with Indigenous Nations and communities, stakeholders and the public to ensure that they are kept informed on a regular basis about all NSDF regulatory matters.

The CNSC will ensure that CNL meets all legal and regulatory requirements, as well as its licence conditions, through regular inspections and evaluations.

4.4 Advanced Nuclear Materials Research Centre (ANMRC)

4.4.1 Introduction

The Advanced Nuclear Materials Research Centre (ANMRC) will be a new Class 1B facility at Chalk River Laboratories (CRL). It will be a modern replacement for aged facilities such as the Universal Cells, Fuel and Material Cells, and various radioisotope laboratories. The licenced activities that will be performed in the ANMRC include those that are already being performed in the facilities that it will replace, with similar types of radiological hazards. The ANMRC is being built using an Integrated Project Delivery (IDP) construction model, with key stakeholders involved in design, fabrication, and construction, that are part of a multi-

party agreement. Under the IDP model, early coordination and planning activities between stakeholders has taken place. Construction activities on the ANMRC commenced in September 2022 and continued through 2023, including mass excavation, shoring, backfilling, pouring for the sub-foundation, and preparation work for footings. Additionally, work progressed off-site on hot cell fabrication.

4.4.2 Licensing Basis

In April 2018, CNL was notified of CNSC staff's assessment of the ANMRC project description. CNSC staff concluded that the construction, operation and decommissioning of the ANMRC activities would be within the current licensing basis, and CNL was advised that they could proceed with the design and construction of the ANMRC. This conclusion was predicated on the fact that the ANMRC will consolidate licenced activities already being performed in existing aged hot cells and laboratories housed across several buildings at CRL into one building, as well as the fact that no new activities will be introduced. In April 2018, to ensure that the project remains within the licensing basis, CNL was also advised that it was CNSC staff's expectation that CNL provide regular updates on the status of the project. These updates continue to occur on a semi-annual basis. Additional means of ensuring that the licensing basis is maintained have included reviewing documentation and conducting inspections.

4.4.3 Activities

CNSC staff have continued to verify compliance with applicable regulatory requirements as the project evolves from a conceptual phase to a detailed design phase. An evergreen suite of documents has been identified for review and in 2023 submissions have included the licensing plan, preliminary engineering schedule, design overview and design basis documents. In July 2023, the ANMRC was included within the scope of a baseline Management System focused inspection at CRL. During this inspection two key areas assessed were contractor management and work control, and included document reviews, interviews, and an inspection of the ANMRC work site. Five notices of non-compliance (NNCs) were raised as a result of this inspection. The NNCs do not pose a risk to the health, safety, or security of people and the environment. Upon review, the actions taken by CNL to address the NNCs were deemed acceptable by CNSC. CNSC staff will continue to monitor CNL's progress and maintain regulatory oversight.

4.5 Modern Combined Electrolysis and Catalytic Exchange Facility (MCECE)

4.5.1 Introduction

The Modern Combined Electrolysis and Catalytic Exchange (MCECE) Facility will be a new Class IB facility at Chalk River Laboratories (CRL). It will be a modern replacement for the aged Combined Electrolysis and Catalytic Exchange Upgrading and Detritiation (CECEUD) Test Facility. The licenced activities that will be performed in the MCECE Facility include the detritiation capabilities that are already permitted for the CECEUD Test Facility, with similar overall hazards. Unlike the CECEUD Test Facility, the proposed MCECE Facility design does not include the capability to upgrade heavy water. Once operational, the MCECE Facility will perform production-scale detritiation of Atomic Energy of Canada Limited's (AECL's) legacy inventory of tritium contaminated heavy water, and convert it into two reusable products, detritiated heavy water and tritium gas immobilized as titanium tritide. Site preparation activities to support soil remediation work on the site for the proposed MCECE Facility commenced in August 2023, including the installation of secant walls, and dewatering system. In December 2023, CNL posted on the Canadian Impact Assessment Registry a notice of intent to construct the MCECE Facility, thereby commencing the formal public comment period.

4.5.2 Licensing Basis

In April 2023, CNL was notified of CNSC staff's assessment of the MCECE Facility project description. CNSC staff concluded that the activities associated with the proposed MCECE Facility would be within the current licensing basis and CNL was advised that they could proceed with the design and construction of the MCECE Facility. This conclusion was predicated on the fact that the MCECE Facility would allow for the resumption of detritiation activities previously permitted in the CECEUD Test Facility, as well as the fact that no new activities would be introduced. As one means for CNSC staff to ensure that the project remains within the licensing basis, CNL was advised that it was CNSC staff's expectation that CNL submit safety and regulatory documentation for the facility as the project progresses. Additional means of ensuring that the licensing basis is maintained have included conducting surveillance and monitoring activities and conducting inspections.

4.5.3 Activities

CNSC staff have verified compliance with applicable regulatory requirements as the project progresses. In 2023 submissions reviewed have included the licensing plan, environmental review classification, and remedial action plan. During site preparation activities, surveillance and monitoring, and inspections have also commenced. In December 2023, the site of the proposed MCECE Facility was included within the scope of a baseline general inspection at CRL by CNSC staff. During this inspection the key areas assessed were environmental reviews, workplace safety, and public information and disclosure, and included document reviews, discussions, and an inspection of the proposed MCECE Facility work site. Two notices of non-compliance (NNCs) were raised as a result of this inspection. The NNCs do not pose a risk to the health, safety, or security of people and the environment. Upon review, the actions taken by CNL to address the NNCs were deemed acceptable by CNSC. CNSC staff will continue to monitor CNL's progress and maintain regulatory oversight.

4.6 Actinium-225 Initial Sales Project (Ac-225 ISP)

4.6.1 Introduction

Canadian Nuclear Laboratories (CNL) is proposing to produce Actinium-225 (Ac-225) in the Universal Cells facility, at the Chalk River Laboratories (CRL) site. The Universal Cells facility houses hot cells used for the remote manipulation of radioactive materials. The facility also has shipping, receiving, and storage areas. The Universal Cells facility has been used in the production of medical isotopes including Cobalt-60, Xenon-133, and as a back-up for Molybdenum-99 production. The raw material for Ac-225 production is Radium-226 (Ra-226). The Ra-226 source material will be a combination of Ra-226 contained in legacy nuclear medical waste sources already stored at the CRL site and imported Ra-226. The sources will be recycled into Ra-226 targets in the Universal Cells facility. The targets will be shipped off-site for irradiation, and the irradiated Ra-226 targets shipped back to CRL for further processing in the Universal Cells facility to separate the Ac-225. CNL will then ship the Ac-225 off-site for additional processing into medical products for end users. In 2023 CNL continued performing research and development work to support the Ac-225 Initial Sales Project (ISP).

4.6.2 Licensing Basis

In August 2023, CNL was notified of CNSC staff's assessment of the Ac-225 ISP project description. CNSC staff determined that the activities associated with the Ac-225 ISP were within the current licensing basis and CNL was advised that they could proceed with the modifications to the Universal Cells facility required for the project. This conclusion was predicated on the fact that the Universal Cells facility is authorized for radioisotope process development and medical isotope production. Additionally, CNSC staff determined that CNL's proposed maximum annual production of Ra-226 targets, would be consistent with and within the bounds of what is currently authorized for the Universal Cells facility. As one means for CNSC staff to ensure that the project remains within the licensing basis, CNSC staff advised CNL on CNSC staff's expectation that CNL submit to the CNSC for review, the suite of documents identified in the licensing plan. As the project matures, CNSC staff will also perform surveillance and monitoring activities, and conduct inspections.

4.6.3 Activities

Compliance activities for Ac-225 ISP were limited in 2023 since the project is still in the early stages. In 2023 the main submission reviewed was the licensing plan and it is expected that this plan will be reviewed and refined as the project matures. CNL also provided several status updates to CNSC staff in 2023 and demonstrated some of the mock-up equipment under development during a site visit in September 2023. CNSC staff will continue to conduct compliance verification on documents submitted by CNL. Once commissioning commences, CNSC staff will begin conducting on-site verification and inspection activities.

4.7 Land Lease for Commercial Project Development

4.7.1 Introduction

CNL is proposing to sublease a parcel of land on the CRL site for commercial project development. The parcel of land CNL is proposing to sublease falls within the CRL site exclusion zone as delineated in the current operating licence. Under the proposal, AECL, owner of the land, will lease the parcel of land to CNL, who in turn will sublease the land. CNL will not be the operator of any potential nuclear facility proposed for the subleased parcel of land; however, a services agreement may be established between CNL and the lessee. For example, CNL may provide services in the areas of security, fire protection, environmental monitoring, emergency preparedness, radiation protection, etc. In 2023 CNL continued to work through the logistics of establishing a sublease and a services agreement to support future commercial project development.

4.7.2 Licensing Basis

In December 2023, CNL was notified of CNSC staff's assessment of the land lease project description. CNSC staff determined that the activities associated with the land lease were outside of the current licensing basis for the CRL site. CNL was advised that a licence amendment would be required to proceed with the proposal. CNL was further advised that once received, CNSC staff would assess the impacts on the programs CNL is required to maintain under its current licensing basis as well as consider the impact on any other areas of regulatory interest that may be affected by a land lease agreement. Various factors informed this conclusion, including the fact that a sublease will impact the land within the exclusion zone, an area which CNL is required to control the use and occupation of as per the current licence.

4.7.3 Activities

In 2023, there were no formal submissions for the project, however a draft licence amendment application was submitted to CNSC staff for a preliminary review. CNL also provided several status updates to CNSC staff in 2023. CNSC staff reviewed the draft licence amendment and provided comments to CNL. Upon receipt of a formal application, CNSC staff will assess the impacts on the programs CNL is required to maintain under its current licensing basis.

5 Conclusions

CNSC staff concluded that the CRL, WL, PHAI, DPWF, G1WF, and NPDWF sites operated safely in 2023. This conclusion is based on CNSC staff's assessments of CNL's activities which included site inspections, reviews of reports submitted by CNL, and event and incident reviews, supported by follow-up and general communication with CNL.

For 2023, the performance in all SCAs was rated as satisfactory except for the human performance management and emergency management and fire protection SCAs at Whiteshell Laboratories, which were rated as below expectations. CNL has compensatory measures in place for the programs under these SCAs. CNSC staff continue to maintain regulatory oversite of CNL's progress.

Overall CNSC staff's compliance activities confirmed that:

- Radiation protection programs at all CNL sites adequately controlled radiation exposures, keeping doses ALARA
- Conventional health and safety programs at all CNL sites continue to protect workers
- Environmental protection programs at all CNL sites were effective in protecting people and the environment

CNSC staff will continue to provide regulatory oversight at all CNL sites, to ensure that CNL makes adequate provisions to protect the health, safety and security of workers, Canadians, and the environment, and continues to implement Canada's international obligations on the peaceful use of nuclear energy.

6 References

[1] *Radiation Protection Regulations*, SOR/2000-203
[2] CSA Group, CSA N288.4, *Environmental monitoring programs at Class I nuclear facilities and uranium mine and mills*
[3] International Organization for Standardization. 2015. ISO 14001:2015. *Environmental Management Systems- Requirements with guidance for use*
[4] CSA Group, CSA N288.6-12, *Environmental risk assessments at class I nuclear facilities and uranium mines and mills*
[5] *Canada Labour Code*, R.S.C., 1985, c L-2
[6] Canadian *Occupational Health and Safety Regulations*, SOR/86-304
[7] CMD 23-M30, *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites 2023*
[8] ECCC, *Guide to Reporting to the National Pollutant Release Inventory*, 2013
[9] *General Nuclear Safety and Control Regulations*, SOR/2000-202
[10] CSA Group, CSA N393-13, *Fire protection for facilities that process, handle or store nuclear substances*
[11] CNSC REGDOC 2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*
[12] *Canadian Environmental Assessment Act, 2012*, S.C. 2012
[13] *Constitution Act*, 1982
[14] CNSC REGDOC 3.2.1, *Public Information and Disclosure*
[15] CNSC REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills*
[16] CNSC REGDOC-3.1.3, *Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices*
[17] CMD 23-M25 Event Initial Report, *Safety stand-down at Canadian Nuclear Laboratories' Whiteshell Site following the discovery of non-compliances in the fire protection program*
[18] CNSC REGDOC 3.6, *Glossary of CNSC Terminology*
[19] *Nuclear Safety and Control Act*, S.C. 1997, c. 9
[20] United Nations, *Treaty on the Non-Proliferation of Nuclear Weapons*
[21] CNSC REGDOC-2.4.3, *Nuclear Criticality Safety*
[22] *Nuclear Non-proliferation Import and Export Control Regulations*, SOR/2000-210
[23] CNSC REGDOC-3.2.2, *Indigenous Engagement*
[24] Nuclear Research and Test Establishment Decommissioning Licence, NRTEDL-W5-8.00/2024, NRTEDL-W5-8.002024.pdf

7 Glossary

For definitions of terms used in this document, see REGDOC-3.6, Glossary of CNSC Terminology [18], which includes terms and definitions used in the *Nuclear Safety and Control Act* [19] and the Regulations made under it, and in CNSC regulatory documents and other publications.

Appendix A: Regulatory oversight

The CNSC regulates the nuclear sector in Canada through:

- licensing
- reporting
- compliance verification
- enforcement
- regular assessment of compliance and performance

The CNSC uses a risk-informed regulatory approach to these activities, applying resources and regulatory oversight commensurate with the risk associated with the regulated facility and activity.

Licensing

Each facility has a licence granted by the Commission, which defines the licence period, licensed activities, and licence conditions. All licensees are required to operate in accordance with the applicable requirements. When a licence is issued, CNSC staff develop a **licence conditions handbook** (LCH) to identify the specific requirements that apply to that licence. Licensees are required to provide various reports and notices to the CNSC in accordance with regulations made under the *Nuclear Safety and Control Act* [19].

Compliance verification and enforcement

Regular inspections and evaluations verify that licensees are complying with laws and regulations, as well as the conditions of their licence. In this way, the CNSC can assure licensees are operating safely and adhering to their licence conditions.

Learn more about The CNSC's approach to compliance verification and enforcement

Appendix B: Safety Performance Rating Levels

Satisfactory (SA)

Licensee meets all of the following criteria:

- Performance meets CNSC staff expectations
- Licensee non-compliances or performance issues, if any, are not risk-significant
- Any non-compliances or performance issues have been, or are being, adequately corrected

Below Expectations (BE)

One or more of the following criteria apply:

- Performance does not meet CNSC staff expectations
- Licensee has risk-significant non-compliance(s) or performance issue(s)
- Non-compliances or performance issues are not being adequately corrected

Unacceptable (UA)

One or both of the following criteria apply:

- Risk associated with a non-compliance or performance issue is unreasonable
- At least one significant non-compliance or performance issue exists with no associated corrective action

Note: Starting in 2019, facility performance assessment ratings were simplified and the “Fully Satisfactory (FS)” was replaced by the “Satisfactory (SA)” rating. It is important to recognize that a facility that received an SCA performance rating of FS in previous Regulatory Oversight Report and now has a rating of SA, does not necessarily indicate a reduction in performance.

Appendix C: Safety and Control Area Framework

The following table provides a high-level definition of each SCA.

Functional Area	Safety and Control Area	Definition
Management	Management System	Covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives and continuously monitors its performance against these objectives and fostering a healthy safety culture.
Management	Human Performance Management	Covers activities that enable effective human performance through the development and implementation of processes that ensure that a sufficient number of licensee personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
Management	Operating Performance	Includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.
Facility and Equipment	Safety Analysis	Covers maintenance of the safety analysis that supports that overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards.
Facility and Equipment	Physical Design	Relates to activities that impact on the ability of systems, components and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.

Functional Area	Safety and Control Area	Definition
Facility and Equipment	Fitness for Service	Covers activities that impact on the physical condition of systems, components and structures to ensure that they remain effective over time. This area includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.
Core Control Processes	Radiation Protection	Covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations* [1]. This program must ensure that contamination levels and radiation doses received by individuals are monitored and controlled and maintained ALARA.
Core Control Processes	Conventional Health and Safety	Covers the implementation of a program to manage workplace safety hazards and to protect workers.
Core Control Processes	Environmental Protection	Covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.
Core Control Processes	Emergency Management and Fire Protection	Covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. This also includes any results of participation in exercises.
Core Control Processes	Waste Management	Covers internal waste-related programs which form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. This area also covers the planning for decommissioning.
Core Control Processes	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity.

Functional Area	Safety and Control Area	Definition
Core Control Processes	Safeguards and Non-Proliferation	Covers the programs and activities required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons* [20].
Core Control Processes	Packaging and Transport	Covers programs for the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

Appendix D: List of Inspections at CNL Sites

D1: CNSC-led inspections at CRL

Table D-1: List of CNSC-led inspections at CRL

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-CRL-2023-01 General Type II Inspection of Waste Treatment Centre	January 30-31, 2023	Fitness for Service Operating Performance Waste Management Emergency Management and Fire Protection Environmental Protection Radiation Protection Conventional Health and Safety	6 NNCs
CNL-CRL-2023-02 Compliance Inspection of the Transportation of Dangerous Goods Program at the Chalk River Laboratories Site	January 24-26, 2023	Packaging and Transport Radiation Protection Security Conventional Health and Safety	3 NNCs
CNL-CRL-2023-03 General Inspection of the Chalk River Laboratories Fuels and Materials Cells	February 28, 2023 to March 3, 2023	Operating Performance Safety Analysis Conventional Health and Safety Radiation Protection Emergency Management and Fire Protection	4 NNCs
CNL-CRL-2023-04 Compliance Inspection of the CNL Cyber Security Program at Chalk River Laboratories	March 20, 2023 to August 4, 2023	Management System Human Performance Management Security Operating Performance	13 NNCs
CNL-CRL-2023-05 General Inspection of the Waste Management Area E and the Waste Tank Farm	March 27-28, 2023	Operating Performance Safety Analysis Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection Waste Management	3 NNCs

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-CRL-2023-06 General Inspection of the Chalk River Laboratories National Research Universal Reactor Facility	April 25-26, 2023	Fitness for Service Operating Performance Environmental Protection Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection Waste Management	8 NNCs
CNL-CRL-2023-07 General Inspection of the Chalk River Laboratories ZED-2 Reactor Facility	May 29-30, 2023	Fitness for Service Operating Performance Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	3 NNCs
CNL-CRL-2023-08 General Type II Inspection of the National Research Experimental Reactor Facility	June 6-7, 2023	Operating Performance Waste Management Emergency Management and Fire Protection Radiation Protection Conventional Health and Safety	5 NNCs
CNL-CRL-2023-09 Focused Type II Management System Inspection at Chalk River Laboratories	July 18-20, 2023	Management System Human Performance Management Operating Performance Conventional Health and Safety	5 NNCs
CNL-CRL-2023-10 Baseline Type II Compliance Inspection - Environmental Protection	September 19-20, 2023	Environmental Protection Management System	No NNCs
CNL-CRL-2023-11 General Type II Inspection of the Waste Management Areas D, G, and H	October 3-4, 2023	Operating Performance Waste Management Emergency Management and Fire Protection Radiation Protection Conventional Health and Safety	9 NNCs

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-CRL-NSD-T2-2023-001 Type II Security Compliance Inspection conducted	October 10-13, 2023	Security	2 NNCs
CNL-CRL-2023-12 General Inspection of the Chalk River Laboratories B375 Radioisotope Laboratories	November 1-2, 2023	Fitness for Service Operating Performance Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	7 NNCs
CNL-CRL-2023-13 Type II General Inspection at Chalk River Laboratories	December 5-6, 2023	Management System Operating Performance Environmental Protection Conventional Health and Safety Human Performance Management Security Other: Public Information and Disclosure	2 NNCs
CNL-CRL-FI-01 Field Inspection of Building 350 Radioisotope Laboratories at Chalk River Laboratories	January 9, 2023	Operating Performance Fitness for Service Waste Management Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	No NNCs
CNL-CRL-FI-02 Field Inspection of NRU Reactor Facility	January 11, 2023	Operating Performance Fitness for Service Safety Analysis Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	4 NNCs

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-CRL-FI-03 Building 250 Facilities Decommissioning Project	March 9, 2023	Operating Performance Radiation Protection Environmental Protection Conventional Health and Safety Emergency Management and Fire Protection Waste Management	No NNCs
CNL-CRL-FI-04 Field Inspection of Dedicated Isotopes Facilities (MAPLE Reactor Buildings and New Processing Facility)	June 19, 2023	Operating Performance Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	No NNCs
CNL-CRL-FI-05 Field Inspection of 2023 Emergency Stay-In Exercise	September 26, 2023	Management System Human Performance Management Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	3 NNCs

D2: CNSC-led inspections at WL

Table D-2: List of CNSC-led inspections at WL

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-WL-2023-01 Baseline Inspection - Environmental Protection	March 21-23, 2023	Environmental Protection	2 NNCs
CNL-WL-NSD-T2-2023-00 Security Inspection	August 14-16, 2023	Security	1 NNC

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-WL-2023-02 Reactive Inspection - Emergency Response and Fire Protection Equipment	August 22-24, 2023	Conventional Health and Safety Emergency Management and Fire Protection	10 NNCs
CNL-WL-2023-03 Reactive Inspection - Emergency Response and Fire Protection at the Whiteshell Laboratories Site	October 24, 2023	Conventional Health and Safety Emergency Management and Fire Protection	8 NNCs
CNL-WL-2023-04 Focused Type II Personnel Training Inspection	December 5-11, 2023	Human Performance Management	4 NNCs

D3: CNSC-led inspections at PHAI

Table D-3: List of CNSC-led inspections at PHAI

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-PHAI-WMP-2023-01 and CNL-PHAI-WMP-2023-02 General Inspection of Port Hope and Port Granby Waste Water Treatment Plants	February 14-15, 2023	Fitness for Service Conventional Health and Safety Radiation Protection Environmental Protection	1 NNC
CNL-PHAI-WMP-2023-03 and CNL-PHAI-WMP-2023-04 General Inspection Small Scale Sites and Major Sites Remediation Activities	April 27-28, 2023	Conventional Health and Safety Radiation Protection Environmental Protection Packaging and Transport	3 NNCs

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-PHAI-WMP-2023-05 Environmental Protection Inspection of Port Hope Harbour	August 9-10, 2023	Conventional Health and Safety Radiation Protection Environmental Protection	1 NNC
CNL-PHAI-2023-06 Inspection of the Highland Drive Landfill	December 12-13, 2023	Radiation Protection Environmental Protection	3 NNCs

D4: CNSC-led inspections at DPWF, G1WF, and NPDWF

Table D-4: List of CNSC-led inspections at DPWF, G1WF, and NPDWF

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-DP-2023-01 Type II General Inspection at the Douglas Point Waste Facility with a Focus on Management System	May 30-31, 2023	Management System Fitness for Service Radiation Protection Conventional Health and Safety Waste Management	3NNCs
CNL-DP-2023-02 Type II Security Compliance	December 6, 2023	Security	No NNCs
CNL-G-1-2022-01 Type II General Inspection	March 15, 2023	Operating Performance Radiation Protection Conventional Health and Safety Waste Management	4 NNCs

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-NPD-2023-01 Type II Baseline Inspection of Nuclear Power Demonstration Waste Facility	March 28, 2023	Fitness for Service Environmental Protection Waste Management Security Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection Operating Performance	1 NNC
CNL-NPD-2023-02 Field Inspection of Emergency Response and Fire Protection at the Nuclear Power Demonstration Waste Facility	October 23, 2023	Emergency Management and Fire Protection Radiation Protection	1 NNC

D5: IAEA-led inspections at CNL Sites

Table D-5: List of IAEA-led inspections at CNL Sites

Inspection	IAEA Inspections (CNSC Escort)
Chalk River Laboratories	56
Whiteshell Laboratories	2
Port Hope Area Initiative	2
Douglas Point Waste Facility	2
Gentilly-1 Waste Facility	2
Nuclear Power Demonstration Waste Facility	N/A
Total	**64**

Appendix E: Reportable Events

This Appendix contains information on the number of reportable events at the CNL sites covered by this ROR in the 2023 calendar year. CNL is required to report events as per the *General Nuclear Safety and Control Regulations* [9], and, if applicable, to the site, the criteria outlined in CNSC REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills* [15] or CNSC REGDOC-3.1.3, *Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices* [16]. A total of 74 events were reported to and assessed by CNSC staff in 2023. CNSC staff, determined that there was no risk to the environment, nor the public associated with these events.

E1: Reportable events for CNL Sites

Table E-1: Number of reportable events at each CNL site in 2023

Facility	Number of events
Chalk River Laboratories	48
Whiteshell Laboratories	15
Port Hope Area Initiative	10
Douglas Point Waste Facility	4
Gentilly-1 Waste Facility	1
Nuclear Power Demonstration Waste Facility	1
Total	**79**

E2: Reportable events at CRL

Table E-2: Reportable Events at CRL in 2023

Event Number	Title	Event Summary	SCA
HSSE-23-2608	Injury to Employee's Thumb	A telescopic traffic light post unexpectedly released from a stuck position, striking an employee's thumb resulting in a laceration and facture.	Conventional Health and Safety
ERM-23-0239	Overhead Crane Upper Limit Switch Failure	An upper limit cut-off switch failed and stopped the crane hoist drive resulting in the crane in the Waste Treatment Centre making contact with the crane drum and thus shearing of the 5/16 inch diameter hoist cable.	Operating Performance
ERM-23-0822	Emergency Response to Unknown Chemical Odor During Sort and Segregation Operations within B599F Temporary Ventilated Enclosure	A legacy waste bin from NRU Facility was sent for processing at the sort and segregation facility. Upon opening of the waste bin, a strong odour was emitted from the bin presumed to be chemical substance. A safe back out was preformed.	Emergency Management and Fire Protection
ERM-23-0832	Monthly fire extinguisher testing not completed in NRU	Monthly fire extinguisher inspections were not completed for over 12 months.	Emergency Management and Fire Protection
ERM-23-1007	Building 100 Area Monitor Found De-energized	During the transfer of the new electrical re-feed and transfer, an area radiation monitor was left unplugged and had thus been out of service for two weeks.	Radiation Protection
S&T-23-1041	B375 FMC In cell light breaks causing small fire	An in-cell metal halide light failed causing embers to fall onto a Kimtech dry wipe, causing a fire in the fuel and materials cells, hot cell 3.	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
HSSE-23-0817	Unauthorized Fire Alarm System Work by Unqualified Contractor Resulting In Unplanned System Impairment	A request went out to bypass the fire alarms so that duct work could be completed. It was discovered later that day that there was a active trouble alarm. Further investigations discovered that the duct detector was relocated and non-compliant wiring was installed in junction box to the air duct detector.	Emergency Management and Fire Protection
C-PROJ-23-0833	Contractor Hot Work Event at ANMRC Construction Site	A worker was cutting steel that was positioned on a wooden skid using a torch. This resulted in smoke and flames coming from the combustible skid.	Emergency Management and Fire Protection
HSSE-23-1466	B507 Fire Dispatched for Burning smell in Vestibule	A boot boy foot cleaner at the entrance to the building had a smell of burning rubber and the vestibule was hot, therefore the employee pulled the fire alarm.	Emergency Management and Fire Protection
ERM-23-1549	No Preventative Maintenance / Inspections Scheduled for Exhaust Fans	No preventative maintenance was completed for exhaust fans in Waste Management Areas D and H.	Fitness for Service
ERM-23-1572	DIF non-NCCA limit exceedance	The dedicated isotopes facility was found to not have been registered as a nuclear criticality controlled area or non-nuclear criticality controlled area, despite the presence have small amounts of uranium-235 in fission chambers and more than 200 kilograms of depleted uranium in flask shielding.	Safety Analysis
ERM-23-0433	Missed PMR B137 EOC Charcoal Filter Absorber Change	Preventative maintenance was not completed on the air exchange system for building 137.	Fitness for Service
ERM-23-1505	Loose Contamination on ISO	Radiation protection staff discovered loose beta/gamma contamination on packages in waste	Radiation Protection

Event Number	Title	Event Summary	SCA
	Containers and Liquid Discharge in WMA-H	management area H. While opening the container 500-mL liquid made contact with the ground.	
HSSE-23-2015	Tri-axle Truck Slides Off Road	Contractor working on the ANMRC slid off the shoulder of Twin Lakes Road at CRL in the tri-axle vehicle they were driving while passing two pulled over vehicles on the opposite side of the road.	Emergency Management and Fire Protection
HSSE-23-2016	Unplanned Fire System Impairment at B585 and B592	A junction box with circuits for building 585 A, B, C flooded with water resulting in loss of fire detection systems and communication to the alarm monitor in building 592.	Emergency Management and Fire Protection
HSSE-23-1950	Small Grass Fires Near Maskinonge Lake	A grass fire occurred below a power line as a result of hot molten metal falling from the faulty power line onto the grass.	Emergency Management and Fire Protection
ERM-23-1832	B100 Fire Alarm Activation	Smoke in B100 as a result of 24 volt speaker fault. Fire department isolated the system.	Emergency Management and Fire Protection
S&T-23-2349	Fuel and Materials Cells sent material in a waste can that was not identified on an Inventory Change Document to Waste Management Area	Fuel and Materials Cells sent material subject to safeguards reporting to Waste Management Area without the required Inventory Change Document.	Safeguards
ERM-23-2290	Lightning Struck Tree at Twin Lakes	Lightning had struck a tree at the Twin Lakes Pit site causing smoke. The emergency line was called and the CRL fire department responded to the scene.	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
BUS MGMT-23-2164	Non-compliances identified between the Nuclear Cyber Security Program and CSA N290.7-14	A self-assessment was conducted by CNL on their cyber security program which identified notices of non-compliance.	Security
ERM-23-2181	B260 UPS Panel Indication Light Repair Causes Loss of Class II Power To Supported Systems – Emergency Lighting	A blown fuse was replaced. Upon re-energizing the panel, the breaker failed and was unable to be reset resulting in an outage to the emergency lighting.	Emergency Management and Fire Protection
HSSE-23-2219	Worker Removed PAD and TLD While Working in a Radiological Zone 3	A CNL employee was performing work in a radiological zone 3 without wearing a thermoluminescent dosimeter or a personal alarming dosimeter. The estimated dose received to the worker for the duration of the work has been accounted for and added to the dose records.	Radiation Protection
ERM-23-2253	NRU building rounds not completed 22-Jul-2023	A CNL employee scheduled to be on shift in NRU forgot to inform CNL that they were unwell and would not be present for their shift resulting in scheduled rounds in NRU for the day being incomplete.	Operating Performance
ERM-23-2673	Inaccurate Waste Data Leads to Classification Error	A drum of mixed-waste was consigned for processing at Permafix Diversified Scientific Services Incorporated (DSSI). Upon receipt, it was determined to have an elevated activity level of tritium and thus its safety marks should have been labelled as “UN3321, Low Specific Activity (LSA-II)”, and not the “UN2910, Excepted Package”.	Packaging and Transport
ERM-23-2631	Hand & foot Monitor used while being outside of	The hand and foot monitor used to detect contamination on workers entering the designated break area in room 402 of B150 was found to be past its annual calibration date.	Radiation Protection

Event Number	Title	Event Summary	SCA
	calibration expiry date		
ERM-23-2732	Contamination from Breached Waste Package	During movement of waste packages. A waste package was being transported onto a CNL truck, during the transfer the plastic bag containment broke leading to a release of dry sludge onto the truck bed and leaking off onto the ground.	Waste Management
ERM-23-2689	Source stored by CNL at Chalk River Laboratories found without current leak test	IAEA sealed source was not leak tested and was missed since the source was not registered with the Radiation Protection Program.	Safeguards
ERM-23-3273	Personal Occupational Injury - Contractor Fell Down Stairs, left site via ambulance to DRDH - Dexterra Employee	Contractor was cleaning stairs and slipped and fell. CNL's emergency line was contacted and the contractor was taken to hospital.	Emergency Management and Fire Protection
CTA-23-2886	21-day reporting timeline missed for reportable event	Full report for HSSE-23-2608 "Injury to employee's thumb" was not submitted within the 21 day time frame.	Management System
CTA-23-3311	Subsection 16.7.1 Classroom training of REGDOC 2.4.3 has not been sufficiently met with respect to annual review.	CNL found that the computer-based training module had not been reviewed annually as required by Subsection 16.7.1 of REGDOC-2.4.3, *Nuclear Criticality Safety* [21]. CNL staff is undertaking corrective actions to prevent recurrence of this type of event. Actions will be completed by end of November 2024. CNSC staff are satisfied with the corrective measures identified by CNL and will review all actions once CNL confirms completion.	Human Performance Management

Event Number	Title	Event Summary	SCA
BUS MGMT-23-3296	Graphite Imported without Required CNSC Licence	A CNL scientist imported a 950-gram nuclear-grade graphite sample without an import licence as required under section A.1.4 of the CNSC *Nuclear Non-proliferation Import and Export Control Regulations* [22].	Safeguards
ERM-23-3521	Degraded Pipe Found while Hand Excavating at B375	During excavation work done by hand outside of Building 375, workers exposed infrastructure and observed that an underground pipe appeared badly corroded and had a crack that might have leaked.	Radiation Protection
ERM-23-3204	Corrosion on IAEA COBRA Seal	As the IAEA conducted the 2023 Physical Inventory Verification (PIV) of the Chalk River Waste Management Areas, corrosion present on a seal for a concrete canister prevented the IAEA from obtaining a successful reading. Seal integrity verification could not be completed.	Safeguards
HSSE-23-2545	Brake On Contractor Cement Truck Catches Fire	Upon arrival to the CRL outer gate, it was noticed that one of the rear brakes on a contractor cement truck had caught fire after travelling a long distance on the highway.	Emergency Management and Fire Protection
S&T-23-2119	Error found on calibration sticker, in-service area monitor in the HPNG Facility past its calibration due date	Due to an error on a calibration sticker an area neutron radiation monitor was left in service 22 days past its calibration due date	Radiation Protection
ERM-23-1435	B594 Rope Left on Top of Heater	An approximately 8 to 10 foot rope attached to the wall was found to be resting on top of an operational heater inside of B594A, producing smoke. The rope was installed the previous day and was intended to secure a key for a nearby source cabinet.	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
S&T-23-1303	IAEA Seal identified as damaged	During the annual Physical Inventory Verification (PIV) activities in the Nuclear Materials Storage Facility, an International Atomic Energy Agency (IAEA) inspector identified that an IAEA seal attached to a storage port was damaged, and the face of the seal was dented. The seal and sealing wire remained intact on the storage location.	Safeguards
HSSE-23-1677	Transfer Flask Containing Depleted Uranium Used as Shielding not Being Leak Tested	A transfer flask containing depleted uranium was not leak-tested as required by the Nuclear Substances and Radiation Devices Regulations. A leak test was subsequently performed.	Radiation Protection
ERM-23-3000	Contractor Left Unescorted in the Chalk River Laboratories Main Protected Area	An authorized escort parted ways with a contractor within a protected area of the CRL site. The contractor was un-cleared for site access without an escort.	Security
ERM-23-3556	Incoming shipment has higher than expected radiation fields upon receipt	CRL received a shipment with Radioactive II-Yellow labels. Following receipt procedures, dose rate measurements were performed and found to be higher than the label indicated. The increase in dose rate did not change the classification of the material. CRL updated the Category Label based on the measured dose rate.	Packaging and Transport
C-PROJ-23-3629	Worker Struck on Bridge of Nose by Tool	A contract worker was performing work with a long aluminum tool. Once finished with the tool, it was improperly stored upright against another piling. The contractor continued working adjacent to the tool and the vibrations caused the tool to fall and strike the worker on the nose. Following an assessment at Deep River& District Hospital, the contractor was cleared to return to normal duties.	Conventional Health and Safety

Event Number	Title	Event Summary	SCA
S&T-23-3692	Failure to register a legacy sealed source and perform required leak test at the prescribed frequency	An unregistered source from an obsolete Gas Chromatograph (GC) was discovered during routine lab activity. No loose contamination from the source was detected.	Radiation Protection
ERM-23-3737	Excavator blew Hydraulic Line	An excavator was loosening a stockpile of aggregate when a primary hydraulic fitting failed and spilled a large portion of the hydraulic tank reservoir onto the frozen ground.	Environmental Protection
ERM-23-3755	Remedial Actions Plan was not submitted to the CNSC prior to remediation work commencing in the footprint for the Modernized Combined Electrolysis and Catalytic Exchange Facility.	A remedial action plan for the soil at the potential Modernized Combined Electrolysis and Catalytic Exchange Facility site was prepared by CNL but not sent to CNSC staff 30 days prior to commencing soil removal. CNL paused work pending the review by CNSC.	Environmental Protection
CTA-23-3826	Missed Response to Regulator Request	CNSC staff sent correspondence to the designated representative of the licensee for waste management. Receipt of the request was not acknowledged, nor was an internal action raised to capture the request from CNSC staff. A follow-up email was sent by CNSC staff once the deadline had passed and the follow-up was acknowledged.	Management System

Event Number	Title	Event Summary	SCA
C-PROJ-23-3834	Process for Fire screening (Fire Prevention Walkdown) had not been completed for the contractor trailers in support of soil remediation activities.	Temporary Contractor Trailers installed on the CRL site were installed without confirmation that the appropriate steps, including confirmation of Contractor compliance with building code requirements for fire screening activities, had been completed.	Emergency Management and Fire Protection
CTA-23-3650	Missed Response to Regulator Request	Correspondence from the CNSC was sent to CNL. The date to respond to CNSC was missed and thus, two follow-up emails were sent to CNL. The second follow-up email was sent to a wider number of delegates.	Management System

E3: Reportable events at WL

Table E-3: Reportable Events at WL in 2023

Event Number	Title	Event Summary	SCA
HSSE-23-0058	Process Outfall Effluent Exceeded Whiteshell's Environmental Release Action Level for Manganese	There were action level exceedances for manganese from WL's process outfall liquid effluent. The exceedances were attributed to accumulated sediment on roadways that was not removed by street sweeping and entered storm drains onsite (area soils normally have elevated manganese concentrations). CNL staff reported the event to the CNSC once it was discovered, investigated the event, and manganese concentrations reduced after street sweeping. CNSC staff are satisfied with CNL's corrective actions after follow-ups and desktop reviews.	Environmental Protection

Event Number	Title	Event Summary	SCA
HSSE-23-1212	Whiteshell Laboratories Fire Response Program Non-Compliances	CNL conducted a planned focused self-assessment of the Whiteshell Laboratories Fire response training, equipment and overall response capability for compliance with the fire protection regulatory requirements. CNL identified deficiencies in training curriculum, records and firefighter protective gear and this CNL determined that it was not able to maintain the minimum complement of Emergency Services Organization staff required to operate the WL site at full operations. CNL placed the Whiteshell site in a non-operational state and planned to conduct a root cause analysis and development of a multi-phase restart plan with a corrective action plan. CNSC staff continue to perform compliance oversight of CNL's execution of its multi-phase restart plan and at regulatory hold points before CNL can move through its defined site restart phases.	Emergency Management and Fire Protection
HSSE-23-2514	Unauthorized Access to a Protected Area at Whiteshell Laboratories	As a result of CNSC staff inspection, the licensee self identified a lack of administrative control with security clearances. During the inspection CNL staff self identified an area of non-compliance related to access to the protected area, specifically a site access security clearance (SASC) mid-point review not being completed for one CNL employee. CNL has taken immediate actions and initiated an extent of condition review, including corrective actions that CNSC staff have reviewed. These corrective actions have been implemented by the licensee.	Security

Event Number	Title	Event Summary	SCA
HSSE-23-2584	Missing pre-employment medical assessment records for the Whiteshell fire brigade	CNL self-identified that it did not have records or pre-employment medical assessment for 10 newly hired Industrial Fire Brigade members as required. Subsequently, while preparing to submit firefighter annual medical assessment records to CNSC inspectors, CNL discovered 8 medical assessments for current employees to have lapsed over 2 months. CNL took corrective action to investigate the cause and prevent re-occurrence and revised CNL procedures. CNL also completed the required medical assessments for the employees and scheduled annual medical assessments for existing employees where assessments had lapsed. CNSC staff are satisfied with CNL's corrective actions and planned follow-up inspections to evaluate CNL's corrective action effectiveness.	Emergency Management and Fire Protection
HSSE-23-3266	Whiteshell fire extinguishers and emergency lights not being inspected	CNL discovered 3 fire extinguishers had not been replaced during a site -wide fire extinguisher replacement campaign and were subject to monthly inspection, testing and maintenance without an overdue hydrostatic test being identified and addressed. Multiple emergency lights in several Whiteshell facilities were also found to have not undergone inspection, testing or maintenance activities. CNL took corrective action to remediate the fire extinguishers and emergency lighting, and implementing corrective actions to prevent re-occurrence. CNSC staff are satisfied with CNL's corrective actions and planned follow-up inspections to evaluate CNL's corrective action effectiveness.	Emergency Management and Fire Protection
HSSE-23-2972	Missing Fire Dampers from Preventative Maintenance - Regulatory Schedule	CNL fire protection staff identified fire dampers that were listed as performing a fire-damper safety function that were not on the mandatory preventative maintenance schedule. There was no record of inspection and maintenance in performed on them since installation in 2013. CNL conducted corrective actions to investigate the cause and prevent re-occurrence. CNSC staff are satisfied with CNL's corrective actions and planned follow-up inspections to evaluate CNL's corrective action effectiveness.	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
HSSE-23-3545	Employee arm injury while exercising	A Whiteshell Laboratories firefighter was exercising while on duty and injured themself while warming up in their left arm. CNSC staff have reviewed the event and actions taken and CNL's actions have been deemed acceptable.	Conventional Health and Safety
ERM-23-0854	Whiteshell Laboratories - Non-compliance with Import/Export Control Procedure	It was determined that technology relating to the design of Whiteshell Reactor 1 (WR-1) components such as calandria, fuel channels, etc., were transferred to US entities without the proper export licence in place as part of bidding process for the WR-1 decommissioning project. No review of the information for export control content or contact with Export and Import Compliance was done. CNL immediately stopped transfer of any further document when discovered and notified bidders to destroy the documents with proof. CNL conducted corrective actions to investigate the cause and prevent re-occurrence. CNSC staff are satisfied with CNL's corrective actions	Safeguards
HSSE-23-1449	Lapsed Annual First Aid Qualification for Whiteshell Laboratories Tiered Response Force Officer	One Tiered Response Force (TRF) Officer was found to have lapsed in their first aid qualification. The TRF Officer worked one 12-hour shift while their qualification was lapsed. Work restrictions were put in placed related to the TRF duties until the individual had completed the necessary training. CNL performed an extent of condition and confirmed all current TRF Officer training records were up to date. CNSC staff are satisfied with CNL's corrective actions	Emergency Management and Fire Protection
HSSE-23-1539	Whiteshell Laboratories Reportable Security Event	A minor security impact, CNL reported this event as a failure of a lighting system, that had short term and minor consequence. Corrective actions have been implemented by CNL.	Security
HSSE-23-3747	Whiteshell Laboratories – Missed 21 Day Reporting Timeline for Reportable Event HSSE-23-2972	The full Unplanned Event Report for HSSE-23-2972 "Missing Fire Dampers from Preventative Maintenance - Regulatory Schedule", was not submitted within the required 21-day timeframe. Due to an oversight, CNL's tracking of HSSE-23-2972 was not in place and missed the required submission date. CNL has applied additional resources to support its licensing and regulatory	Operating Performance

Event Number	Title	Event Summary	SCA
		submissions and tracking. CNSC staff are satisfied with CNL's corrective actions	
HSSE-23-3777	Whiteshell Laboratories - Firefighter Response to Heater Control Switch Failure	CNL Firefighters responded to a call in the main Whiteshell Laboratories parking lot. A CNL employee reported seeing smoke coming from the heater control switch and shut down the equipment. No fire suppression was required. CNL determined that the heater switch was faulty and disconnected the equipment and placed it out of service. CNSC staff are satisfied with CNL's corrective actions.	Emergency Management and Fire Protection
CTA-23-3311	Subsection 16.7.1 Classroom training of REGDOC 2.4.3 has not been sufficiently met with respect to annual review.	CNL found that the computer-based training module had not been reviewed annually as required by Subsection 16.7.1 of REGDOC-2.4.3, *Nuclear Criticality Safety* [21]. CNL staff is undertaking corrective actions to prevent recurrence of this type of event. Actions will be completed by end of November 2024. CNSC staff are satisfied with the corrective measures identified by CNL and will review all actions once CNL confirms completion.	Safety Analysis
ERM-23-2291*	Non-compliance with reporting requirements for CNL's Integrated Waste Strategy	Failure to notify CNSC staff of the changes made to the integrated waste strategy document.	Waste Management
BUS MGMT-23-2164	Non-compliances identified between the Nuclear Cyber Security Program and CSA N290.7-14	A self-assessment was conducted by CNL on their cyber security program which identified notices of non-compliance.	Security

*Event applicable to WL, G1WF, and NPDWF

E4: Reportable events at PHAI

E-4: Reportable Events at PHAI in 2023

Event Number	Title	Event Summary	SCA
ERM-23-0460	Transportation of dangerous good shipment misclassified identified	A package being sent from a private property undergoing the Property Remediation Restoration sent a waste package to the LTWMP as "exempt". As protocol, the paperwork was reviewed by PHAI SMEs and determined that the documentation was incomplete due to the lack replicability.	Packaging and Transport
ERM-23-2235	Perimeter Security Fence Vandalism	An individual bypassed the perimeter fencing and passed through the worksite. CNSC staff followed up and this matter is considered closed.	Security
ERM-23-2652	Stand Behind Skid Steer Small Fire	A small flame was present at the engine compartment of a rental skid steer.	Emergency Management and Fire Protection
ERM-23-2751	EMS Called for Existing Medical Condition	A worker was performing clerical work and experienced worsening of their pre-existing medical condition.	Conventional Health and Safety
ERM-23-3435	Material Falls Off Haul Truck onto Zone 2 Unloading Platform	A small amount of material meant to go into RP Zone 3 fell off a truck's rear tarp into RP Zone 2. No persons were contaminated or exposed to high dose rates during this event.	Radiation Protection
HSSE-23-2951	Port Hope Area Initiative (PHAI) Fire Program Focussed Self-Assessment	CNL conducted a fire protection self-assessment at PHAI as a result of the WL 12(2).	Emergency Management and Fire Protection
ERM-23-1951	False Alarm Triggered During Smoke Detector Cleaning	During a routine dust clearing from the smoke detector using dry air, the alarm falsely went into alarm mode.	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
ERM-23-1756	Action Level Exceedance in Final Effluent	CNL identified that oxidization of certain types of pumps and flow control components is the source of the elevated copper levels. As a corrective action, CNL will be replacing components that are contributing to the elevated copper levels. CNL will not be releasing effluent from the plant until the component replacement activities are complete and effluent samples are within normal operating range.	Environmental Protection
ERM-23-0949	CN/CP Viaducts Site: Slip on ice results in ankle injury	CNL confirmed that the ice patches were not identified at the start of the workday and as a result the use of salt and sand had not been used on walkways. A standdown of the CN/CP Viaducts site was performed to review the incident. As a corrective measure salt was placed on walkways at the site. In addition, a formal inspection of designated walkways for ice and snow was initiated before each workday starts.	Conventional Health and Safety
ERM-23-3920	Historic Waste Program – Port Hope Area Initiative Contractor – Transportation of Dangerous Goods Inaccurate Shipment	A shipment received by CNL PH Facility from a CNL contractor had inaccurate paperwork and labelling.	Packaging and Transport

E5: Reportable events at DP, G1WF, and NPDWF

E-5: Reportable Events at DP, G1WF, and NPDWF in 2023

Event Number	Title	Event Summary	SCA
ERM-23-1278	Douglas Point Waste Facility Spent Fuel	Configuration changes to the Bruce Power security monitoring system caused an unplanned	Security

Event Number	Title	Event Summary	SCA
	Canister Area Security System Monitoring Interruption	interruption to the Douglas Point Waste Facility spent fuel canister building.	
HSSE-23-2952	Douglas Point Waste Facility (DPWF) Fire Protection Program Self-Assessment	CNL conducted a fire protection self-assessment at DPWF as a result of the WL 12(2)	Emergency Management and Fire Protection
ERM-23-3219	Fire System Impairment - Douglas Point Waste Facility Fire Alarm Monitoring System	A fire alarm monitoring communication system was de-energized, and the battery backup was depleted. DPWF staff were erroneously notified as to which battery was depleted. Power was returned to the monitoring communication system after the three-day outage. The impairment did not affect the fire detection and alarm system.	Emergency Management and Fire Protection
HSSE-23-3566	Equipment Failure at Douglas Point Waste Facility Canister Area	A power interruption at Bruce Power Centre resulted in the loss of power to the DP Canister area security lighting.	Security
HSSE-23-2953	Gentilly-1 Waste Facility (G1WF) Fire Protection Program Self-Assessment	During a self-assessment of the fire program at Gentilly-1 Waste Facility, CNL uncovered that a mutual aid agreement between the Municipality of Bécancour Fire Department and the Hydro-Quebec Gentilly-2 site did not specifically include Gentilly-1 Waste Facility.	Emergency Management and Fire Protection
HSSE-23-2955	Nuclear Power Demonstration (NPD) fire program self-assessment	CNL conducted a fire protection self-assessment at NPD as a result of the WL 12(2).	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
ERM-23-2291*	Non-compliance with reporting requirements for CNL's Integrated Waste Strategy (G1WF)	Failure to notify CNSC staff of the changes made to the integrated waste strategy document.	Waste Management
ERM-23-2291*	Non-compliance with reporting requirements for CNL's Integrated Waste Strategy (NPDWF)	Failure to notify CNSC staff of the changes made to the integrated waste strategy document.	Waste Management

*Event applicable for WL, G1WF, and NPDWF

Appendix F: Significant changes to Licence Condition Handbooks

F1: Canadian Nuclear Laboratories

Facility	Licence Condition Handbook number	Description of change	Revision number	Revision date
Port Hope Area Initiative	WNSL-W1-2310.00/2032	New LCH document to accompany new consolidated licence	00	January 1, 2023
Chalk River Laboratories	NTEOL-LCH-01.00/2028	Updated to reflect changes occurring at CRL and to reflect current versions of compliance verification criteria publications and documents	03	February 14, 2023
Whiteshell Laboratories	NRTEDL-LCH-08.00/2024	Updated to reflect current versions of compliance verification criteria publications and documents	01	April 3, 2023
Nuclear Power Demonstration Waste Facility	WFDL-LCH-W4-342.00/2034	Updated to reflect current versions of compliance verification criteria publications and documents	02	August 15, 2023

Appendix G: Status of issues, concerns and requests from intervenors in the 2022 CNL ROR

In direct response to the Commission's action from the 2021 RORs, CNSC staff has established an internal CNSC issues, concerns, and comments tracking table for each intervening Indigenous Nation or Community in the 2023 CNL ROR. These tables also summarize and track CNSC's efforts to respond to and address intervenor requests concerns and comments, where feasible. In the 2022 CNL ROR Commission meeting, the Commission noted the concerns raised by several intervenors that comments and recommendations made regarding past RORs had not been addressed directly by CNSC staff. As a result, the Commission expects to be updated on the status of CNSC staff's efforts to address and track intervenor recommendations across all RORs moving forward. The Commission has directed CNSC staff to provide an update on whether and how comments and recommendations made by Indigenous Nations and communities, in particular, have been, or will be, addressed, including where there are disagreements.

The purpose of this appendix is to provide a summary of information and data from the CNSC's issues tracking tables to the Commission. The tables below provide an overview of the issues raised in interventions in relation to the previous year's ROR, and the proposed path forward to address them. Table A outlines the number of specific issues and concerns raised by each intervening Indigenous Nation and community and their related themes, as well as CNSC responses and proposed path forward. Table B provides an overview of the key thematic categories raised by each intervening Indigenous Nation and community and the total number of times each theme or topic was raised by all intervenors in their interventions. Tracking this thematic information will provide a baseline to help direct CNSC staff to focus their efforts on future engagements and consultations to areas that generate the most concerns. This is a new ROR initiative and will continue taking shape moving forward as CNSC staff begin tracking trends in intervention topics and track progress with Indigenous Nations and Communities.

The following table provides details regarding the number of specific issues and concerns raised in the interventions by Indigenous Nations and communities in relation to the 2022 CNL ROR, the number of thematic categories the issues and concerns are grouped by, and the status of the CNSC's approach to responding to and addressing each issue, concern or request raised in the interventions to date.

CNSC staff are committed to responding to and following up with the intervenors below with regards to their interventions and working collaboratively to identify options for a path forward to address the comments, where possible. For Indigenous Nations and communities that have a

ToR for long-term engagement with the CNSC, requests, concerns and comments raised in relation to the ROR have been integrated into the engagement work plan and regular meetings with each Indigenous Nation or community, including sharing the specific issues and concerns tracking table with each Indigenous Nation and community in order to verify the data and discuss a path forward for addressing their comments.

In addition, CNSC staff have also followed up with Indigenous Nations and communities who the CNSC does not currently have a ToR for long-term engagement with, in order to follow up on or set a path forward on their comments and issues.

Table G-1: Interventions from Indigenous Nations and Communities in 2022

Intervenor	Number of issues or comments raised	Responses made*	Action(s) taken by CNSC
Algonquins of Pikwàkanagàn First Nation (AOPFN)	11 (Across 6 categories)	11	The issues, concerns and recommendations raised by Algonquins of Pikwàkanagàn First Nation in their intervention for the 2022 CNL ROR are being addressed and discussed with Algonquins of Pikwàkanagàn First Nation through an issues tracking table maintained by CNSC staff, as well as through regular meetings as part of AOPFN and CNSCs TOR and engagement work plan. CNSC staff reached out to the Algonquins of Pikwàkanagàn First Nation to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2022 CNL ROR. This meeting is scheduled for July 8, 2024. CNSC staff looks forward to working with Algonquins of Pikwàkanagàn First Nation to address their comments and recommendations. The themes of the issues and concerns raised span from environmental monitoring, CNSC funding

Intervenor	Number of issues or comments raised	Responses made*	Action(s) taken by CNSC
			programs, the incorporation of Indigenous Knowledge into the RORs and more.
Manitoba Métis Federation (MMF)	8 (Across 4 categories)	8	The issues, concerns and recommendations raised Manitoba Métis Federation in their intervention for the 2022 CNL ROR are being addressed and discussed with Manitoba Métis Federation through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the Manitoba Métis Federation to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2022 CNL ROR. CNSC staff looks forward to working with Manitoba Métis Federation to address their comments and recommendations. The themes of the issues and concerns raised span from environmental risk assessments, consultation and engagement and more.
Hiawatha First Nation (HFN)	21 (Across 6 categories)	21	The issues, concerns and recommendations raised by Hiawatha First Nation in their intervention for the 2022 CNL ROR are being addressed and discussed with Hiawatha First Nation through an issues tracking table maintained by CNSC staff as well as through regular meetings as part of HFN and CNSCs TOR and engagement work plan. CNSC staff reached out

Intervenor	Number of issues or comments raised	Responses made*	Action(s) taken by CNSC
			to the Hiawatha First Nation to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2022 CNL ROR. This meeting is currently scheduled for July 18, 2024. CNSC staff looks forward to working with Hiawatha First Nation to address their comments and recommendations. The themes of the issues and concerns raised span from proponent engagement and consultation, language and formatting of CNSC reports, and more.
Kebaowek First Nation (KFN)	5 (Across 4 categories)	5	The issues, concerns and recommendations raised by Kebaowek First Nation in their intervention for the 2022 CNL ROR are being addressed and discussed with Kebaowek First Nation through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the Kebaowek First Nation to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2022 CNL ROR. CNSC staff looks forward to working with Kebaowek First Nation to address their comments and recommendations. The themes of the issues and concerns raised span from impacts to rights,

Intervenor	Number of issues or comments raised	Responses made*	Action(s) taken by CNSC
			consultation and engagement and more.
Chippewas of Kettle and Stony Point First Nation (CKSPFN)	10 (Across 7 categories)	10	The issues, concerns and recommendations raised by Chippewas of Kettle and Stony Point First Nation in their intervention for the 2022 CNL ROR are being addressed and discussed with Chippewas of Kettle and Stony Point First Nation through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the Chippewas of Kettle and Stony Point First Nation to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2022 CNL ROR. CNSC staff looks forward to working with Chippewas of Kettle and Stony Point First Nation to address their comments and recommendations. The themes of the issues and concerns raised span from emergency management, environmental monitoring and more.

** "Responses made" refers to the number of requests/concerns/comments that CNSC staff have provided dispositions to, responded to directly, or have made requests with intervenors to have a specific meeting and discussions to address their concerns, comments and recommendations. See notes column for more details.*

The following table provides an overview of the key thematic categories raised in interventions from Indigenous Nations and Communities in relation to the 2022 CNL ROR and the number of times each theme or topic was raised in total. In total for this ROR last year there were 5 Indigenous intervenors. The categories included in Table G-2 have been ordered from most

frequently raised to least. The thematic categories are derived from the review of the 2022 interventions and CNSC staff's analysis of the issues and topics raised.

CNSC staff are committed to continuing to follow up and work with each intervenor in Table A, as well as other repeat individuals and civil society organizations who intervened to continue discussions on how best to address these themes and areas of interest identified in their interventions.

Table G-2: Interventions by topic category

Topic of concern, request, comment	Number of times the topic was raised	Number of intervenors who raised the topic
CNL activities and Engagement (e.g., suggestions for improving CNL's engagement with Indigenous Nations and communities)	12	2
CNSC's Consultation and Engagement activities (Indigenous and public) (e.g., suggestions for improvements to the approach to consultation and engagement and request for responses to issues raised)	8	4
Improvements to ROR process and ROR content (e.g., requests related to improving accessibility, providing additional information or clarification in specific sections of the report, providing information about the performance rating system and improving the format of the report)	8	3
Environmental Monitoring (e.g., requests to be included in the development of monitoring plans and for additional monitoring to occur)	8	4

Topic of concern, request, comment	Number of times the topic was raised	Number of intervenors who raised the topic
CNSC Oversight Activities (e.g., suggestions for improvements to the approach to consultation and engagement and request for responses to issues raised)	5	2
Participant Funding Program, Indigenous and Stakeholder Capacity Fund, General Funding (e.g., requests for more funding to support participation in regulatory activities)	3	2
Nuclear Emergency Management (e.g., concerns around potential nuclear emergencies and safety processes)	3	2
Indigenous Knowledge (e.g., requests to clarify how Indigenous Knowledge has been considered and incorporated)	2	1
Other (some examples: Nation-specific concerns, comments relating to specific technologies such as SMRS, or waste)	2	2
Environmental Risk Assessment	1	1
Impacts to Indigenous or Treaty Rights (e.g., concerns about lack of consent from Indigenous Nations and communities in the initial establishment of nuclear operations on traditional territories)	1	1

Topic of concern, request, comment	Number of times the topic was raised	Number of intervenors who raised the topic
Economic Development (e.g., request for more economic opportunities resulting from the nuclear industry)	1	1
Long Term Relationship Development (e.g., requests for additional relationship development activities between the CNSC and Indigenous Nations and Communities)	1	1

CNSC staff take the issues and concerns raised by intervenors seriously CNSC staff will continue to work with each intervenor identified in Tables G-1 and G-2 who have raised issues and concerns on identifying approaches to addressing the different topic areas, requests and comments raised as appropriate. Furthermore, the CNSC is committed to continuously improving the quality of data included in RORs, and the ROR reporting process. CNSC acknowledges that the two main themes of issues raised in the 2022 CNL ROR were “CNL’s Activities and Engagement” and “CNSC’s Consultation and Engagement activities (Indigenous and public)” and has made it a priority to further discuss and address these issues, where feasible. As part of this commitment, CNSC staff have included appendices in all 2023 RORs with information on the issues and concerns raised by intervenors and the status of the CNSC’s work to follow-up, respond to and address each intervention as appropriate, and are working towards the continued expansion and enhancement of reporting to the Commission on issues tracking and engagement efforts.

The CNSC is dedicated to continuous improvement, and actively works to identify ways and approaches for addressing the concerns, comments and recommendations made by intervenors identified in the RORs, where appropriate. In instances where issues and concerns are raised that the CNSC and the intervenor may disagree the CNSC is open to having dialogue and working towards finding solutions and building consensus around key issues within the CNSC’s mandate and authority.

Appendix H: Indigenous Nations, Communities and organizations that have traditional and/or Treaty Territories and/or interests within proximity to the licensed facilities

Facility	Indigenous Nations, Communities and/or Organizations

Chalk River Laboratories
&
Nuclear Power Demonstration
	• Algonquin Anishinabeg Nation Tribal Council
	• Algonquin Nation Secretariat
	• Algonquins of Barriere Lake
	• Algonquins of Ontario
	• Algonquins of Pikwàkanagàn First Nation
	• Conseil de la Nation Anishnabe de Lac Simon
	• Conseil de la Première Nation Abitibiwinni
	• Kebaowek First Nation
	• Kitcisakik First Nation
	• Kitigan Zibi Anishinabeg First Nation
	• Long Point First Nation
	• Métis Nation of Ontario
	• Mitchikanibikok Inik (Algonquins of Barriere Lake)
	• Timiskaming First Nation
	• Wahgoshig First Nation
	• Williams Treaties First Nations:
	  ○ Alderville First Nation
	  ○ Beausoleil First Nation
	  ○ Chippewas of Georgina Island First Nation
	  ○ Mnjikaming (Chippewas of Rama First Nation)
	  ○ Curve Lake First Nation
	  ○ Hiawatha First Nation
	  ○ Mississaugas of Scugog Island First Nation
	• Wolf Lake First Nation

Whiteshell Laboratories	• Sagkeeng Anicinabe First Nation • Black River First Nation • Brokenhead Ojibway Nation

Facility	Indigenous Nations, Communities and/or Organizations
	• Grand Council of Treaty 3 • Hollow Water First Nation • Iskatewizaagegan #39 Independent First Nation • Red River Métis (represented by Manitoba Métis Federation) • Northwest Angle #33 First Nation • Shoal Lake #40 First Nation • Wabaseemoong Independent Nations • Peguis First Nation

Port Hope Area Initiative	• Mohawks of the Bay of Quinte
	• Métis Nation of Ontario
	• Williams Treaty First Nations:
	  ○ Alderville First Nation
	  ○ Beausoleil First Nation
	  ○ the Chippewas of Georgina Island First Nation
	  ○ Curve Lake First Nation
	  ○ Mnjikaming (Chippewas of Rama First Nation)
	  ○ Hiawatha First Nation
	  ○ Mississaugas of Scugog Island First Nation

Douglas Point Waste Facility	• Saugeen Ojibway Nation, comprised of:
	  ○ Chippewas of Nawash Unceded First Nation
	  ○ Saugeen First Nation
	  ○ Historic Saugeen Métis
	  ○ Métis Nation of Ontario
	• Chippewas of Kettle and Stony Point First Nation

Gentilly-1 Waste Facility	• Nation Wôbanaki ○ Abénakis of Wôlinak • Abénakis of Odanak

Appendix I : CNSC Terms of Reference for Long-Term Engagement with Indigenous Nations and communities

I1 : The Algonquins of Pikwàkanagàn First Nation - CNSC Long-term Engagement Terms of Reference

As committed to with the Algonquins of Pikwàkanagàn First Nation (AOPFN) as part of the terms of reference (ToR) for long-term engagement with the CNSC, CNSC staff prepared the following summary and offered to co-author and validate the text with AOPFN. CNSC staff did not receive a response to the request to review to date but are committed to collaborating with the Nation on content related to our engagement and ToR should they be interested moving forward.

On November 30, 2022, CNSC Staff and the AOPFN signed a ToR for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in AOPFN's traditional territory. As part of the ToR, a yearly work plan is developed between the CNSC and AOPFN, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement.

In 2023, the work plan included activities that CNSC staff and AOPFN collaborated on to implement throughout 2023 and beyond, including:

- participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- information, communication and other topics (i.e., REGDOC updates, feedback on CNSC reporting and processes, and PFP opportunities)

In 2023, AOPFN and CNSC staff met regularly in monthly and quarterly meetings, including an in-person quarterly meeting in July 2023, and worked collaboratively to make progress on the agreed upon initiatives in the workplan. CNSC staff and AOPFN continued to track, collaboratively verify, and provide responses to key concerns and issues raised by AOPFN throughout 2023 including through AOPFN's submissions and interventions to the Commission. Topics of discussion related to Canadian Nuclear Laboratories sites in AOPFN's traditional territory included regular updates on the NPD closure project, as well as the NSDF project's status and timelines. AOPFN also provided comments on the NPD Algonquin Knowledge Study What We Heard Report. In 2023, AOPFN presented on their nuclear sector principles, and

indicated their desire for the CNSC to respect and support these principles in environmental assessments (EAs), including the NPD closure project's EA. AOPFN also provided early feedback on the CNSC's REGDOC 3.2.2, *Indigenous engagement* [23]. In addition, CNSC and AOPFN discussed incorporation of AOPFN's proposed criteria for the assessment of the adequacy of CNSC staff and licensee consultation and engagement as well as the incorporation of Indigenous Knowledge into CNSC staff reports and Regulatory Oversight Reports (RORs).

In 2023, AOPFN participated in the CNSC's Independent Environmental Monitoring Program (IEMP) for the Nuclear Power Demonstration site. AOPFN's involvement included reviewing and providing feedback the sampling plan, walking the land with CNSC staff to collaboratively identify potential locations and species for sampling in advance of the sampling campaign, and participating in the field sampling campaign in July 2023. AOPFN also provided recommendations on improvements to the IEMP. Throughout 2023, AOPFN also engaged in the Regional Information Monitoring Network (RIMNet) for the Ottawa valley watershed initiative with CNSC and ECCC.

In 2024, AOPFN and CNSC staff plan to continue monthly and quarterly meetings to work on agreed upon initiatives in the workplan. Some of the activities planned for 2024 include continued consultation and engagement activities for Canadian Nuclear Laboratories projects and Uranium and Nuclear Substances and Processes Facilities in AOPFN territory, consultation on Global First Power's proposed Micro Modular Reactor Project at the Chalk River site and continued work on collaborating on enhancing the approach to weaving AOPFN's Algonquin Knowledge into CNSC staff's assessments and processes respecting AOPFN's Algonquin Knowledge Protocols for project assessments, engagement and collaboration on the IEMP sampling campaign for the SRB Technologies facility in Pembroke, Ontario and ongoing collaboration on the RIMNet initiative. CNSC and AOPFN will also continue to work together on validating, responding to and addressing AOPFN's issues, concerns and recommendations raised in AOPFN's interventions to the Commission and identified through ongoing discussions and engagement.

CNSC staff and AOPFN continue to be committed to strengthening the relationship through ongoing, respectful dialogue to share knowledge, information on culture and history, and perspectives that help CNSC staff and AOPFN learn from each other. CNSC staff will also continue to look for ways to enhance the relationship with AOPFN and identify areas for ongoing improvement in the CNSC's approach to engagement and reporting. CNSC staff and AOPFN will also continue to have discussions on areas of interest and on issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to AOPFN.

I2 : Mississaugas of Scugog Island First Nation - CNSC Long-term Engagement Terms of Reference

As committed to with the Mississaugas of Scugog Island First Nation (MSIFN) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with MSIFN representatives.

In September 2021, CNSC staff started discussions with MSIFN to establish a formal long-term relationship with the community, and a ToR was signed between MSIFN and the CNSC in March 2022. As part of the ToR, a yearly work plan is developed between the CNSC and MSIFN, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. CNSC also provides funding and capacity support to MSIFN through its Indigenous and Stakeholder Capacity Fund to support the meetings, engagement and collaboration work as per the ToR and engagement work plan.

In 2023, the work plan included:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- Collaborative annual reporting to the Commission and to MSIFN Chief and Council
- Updates and discussions on specific projects and ongoing operations of licensed nuclear facilities of interest
- Enhancing information sharing and communication between the CNSC and MSIFN
- Emergency management and preparedness

In 2023, MSIFN and CNSC staff continued to meet monthly and work collaboratively to make progress on a number of the agreed-upon initiatives in the work plan. CNSC staff and MSIFN continued to track, collaboratively verify, and provide responses to key concerns and issues raised by MSIFN throughout 2023.

Topics of discussion related to Nuclear Power Generating sites in MSIFN territory included updates and discussions about the Darlington Nuclear Generating Station (DNGS) and MSIFN's intervention and participation in the 2023 Darlington Waste Management Facility (DWMF) license renewal hearing, Pickering Nuclear Generating Station (PNGS), and Pickering Waste Management Facility (PWMF) including OPG's request to change the licensing basis of the PWMF. CNSC staff and MSIFN met monthly, including an in-person meeting with MSIFN leadership in November 2023, to continue discussions on the Darlington New Nuclear Project (DNNP), DWMF licence renewal, OPG's intent to extend existing operations at the Picking Nuclear Generating Station, as well as concerns regarding the volume of work related to CNSC-regulated activities and facilities within MSIFN's territory given that MSIFN is the closest First Nation community to PNGS, DNGS, DWMF, and PWMF, and hosts several other CNSC regulated facilities in its treaty areas.

MSIFN requested that the CNSC ensure OPG provides all essential information on both the DNNP and the proposed PNGS life extension and planned refurbishment, enabling MSIFN to thoroughly evaluate the impacts of these projects. MSIFN also participated in the 2023 CNSC IEMP sampling campaign for the DNGS. In 2023, CNSC staff and MSIFN began working on a community-specific Potassium Iodide Pill fact sheet, to be finalized in 2024. The MSIFN community is located within the 50km Ingestion Planning Zone (IPZ) for two CNSC regulated facilities: DNGS and PNGS. KI pills have been pre-distributed to the community in preparation for a potential nuclear emergency. CNSC staff are continuing to collaborate with MSIFN to develop related communication materials for leadership and community members in 2024.

Topics of discussion related to Canadian Nuclear Laboratories facilities and sites in MSIFN's territory included updates regarding Chalk River Laboratories, the Nuclear Power Demonstration Closure Project, and the Port Hope Area Initiative license renewal and arsenic clean-up criteria licence amendment.

MSIFN has raised concerns regarding the proposed Darlington New Nuclear Project, including the requirement for consent from impacted First Nations, the lack of plans for Species at Risk habitat compensation, decommissioning, and nuclear waste management, and the fact that the project is proceeding with an outdated environmental assessment that does not meet current standards. MSIFN continues to assert that the DNNP project will have impacts on Rights. CNSC is moving forward with drafting a Rights Impact Assessment regarding MSIFN's rights around the DNNP project, prior to its license to construct hearing in late 2024. MSIFN has expressed concerns that the short timeline provided to complete the RIA will result in a limited understanding of MSIFN's rights in relation to the project, and collaboration is lacking as the CNSC independently prepares the draft RIA without MSIFN's input into designing the study. CNSC staff are working with MSIFN to address these concerns. MSIFN's perspectives including these concerns will be reported to the Commission through the regulatory process for the DNNP Licence to Construct application.

CNSC staff and MSIFN are committed to continuing to strengthen the relationship through ongoing respectful dialogue to share knowledge, information on culture, history and perspectives that help CNSC staff and MSIFN learn from each other and improve communications and collaboration. CNSC staff will also continue to have discussions regarding areas of interest and issues or concerns related to CNSC-regulated nuclear activities of interest to MSIFN.

I3: Hiawatha First Nation - CNSC Long-term Engagement Terms of Reference

As committed to with Hiawatha First Nation as part of the Terms of Reference for long-term engagement with the CNSC, the update below was prepared in collaboration with Hiawatha First Nation representatives.

In May 2023, CNSC staff and Hiawatha First Nation signed a Terms of Reference (ToR) for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in Hiawatha First Nation's traditional and treaty territories. As part of the ToR, a yearly work plan is developed between the CNSC and Hiawatha First Nation that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. In 2023, the work plan included activities that CNSC staff and Hiawatha First Nation collaborated on implementing throughout 2023 and beyond, including:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- Updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- Information, communication, and other topics (i.e. REGDOC updates, feedback on CNSC reporting and processes, funding opportunities, radiation monitoring and cumulative effects)
- Developing a plan for a Hiawatha First Nation Indigenous Knowledge Study

Hiawatha First Nation and CNSC were not able to initiate discussions on developing a plan for an Indigenous Knowledge (IK) study. However, Hiawatha First Nation and CNSC are committed to developing a plan for a Hiawatha First Nation IK Study in 2024.

In 2023, Hiawatha First Nation and CNSC staff continued to meet monthly and work collaboratively to make progress on the agreed upon initiatives in the work plan. Through monthly meetings and interactions, Hiawatha First Nation and CNSC are progressing their working relationship. Topics of discussion related to Nuclear Power Generating sites in Hiawatha First Nation's territory included ongoing environmental monitoring activities, fish impingement and entrainment at the Darlington Nuclear Generating Station and Pickering Nuclear Generating Station, OPG's Pickering Nuclear Generating Station application to authorize operations until 2026 and OPG's application for a licence to construct the DNNP including information about the selected technology, applicability of the Environmental Assessment and regulatory review process. In addition, Hiawatha First Nation participated in the IEMP sampling for the Darlington site. Having Hiawatha First Nation representatives participate in the sampling activities promotes a better understanding of sampling methods and

improves input into future IEMP activities including the inclusion of Hiawatha First Nation species of interest, valued components, and potential sampling locations.

Topics of discussion related to Canadian Nuclear Labs sites and facilities in Hiawatha First Nation's territory included updates and information sharing with regards to ongoing CNL projects and sites including the Near Surface Disposal Facility, Nuclear Power Demonstration and Chalk River Laboratories and the Port Hope Area Initiative clean up criteria amendment application.

In December 2023, CNSC staff had an in-person meeting with Hiawatha First Nation leadership, in their community. CNSC staff provided updates regarding an overview of all nuclear facilities and activities in their traditional and treaty territory. CNSC staff and Hiawatha First Nation also discussed concerns and priorities for 2024 and beyond.

In 2023, Hiawatha First Nation provided feedback through their intervention on the 2022 Regulatory Oversight Reports and continue to do so through ongoing discussions with CNSC staff. CNSC staff have made a number of improvements to CNSC staff reports and documentation based on the feedback, such as updating language used throughout CNSC documentation and having discussions on how to better incorporate Indigenous Knowledge and perspectives in CNSC's regulatory processes (including Environmental Protection Review Reports). In 2023 CNSC staff and Hiawatha First Nation had focused discussions on the key themes raised in their interventions to the Commission and are working together to discuss and address the issues, concerns and recommendations raised in Hiawatha First Nation's interventions.

CNSC staff and Hiawatha First Nation continue to be committed to strengthening the relationship through on-going respectful dialogue to share knowledge, information on culture, history and perspectives that help CNSC staff and Hiawatha First Nation learn from each other and improve collaboration and communication. CNSC staff are committed to continuing to have discussions regarding areas of interest and issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to Hiawatha First Nation. Hiawatha First Nation would like to see real change in the CNSC's regulatory and consultation processes. This includes the implementation of the 2018 Williams Treaties Settlement Agreement, which would in effect uphold the Inherent and Treaty rights of the First Nation. The Williams Treaties Settlement Agreement was signed in 2018 and recognized the pre-existing treaty harvesting rights for the First Nations members and included both federal and provincial apologies for the negative impacts of the Williams Treaties on the First Nations. CNSC staff and Hiawatha First Nation are committed to working together to ensure Hiawatha First Nation's rights and interests are protected and reflected in the CNSC's regulatory process and documents.

I4 : Kebaowek First Nation - CNSC Long-term Engagement Terms of Reference

As committed to with Kebaowek First Nation (KFN) as part of the long-term relationship arrangement with the CNSC, the update below was prepared in collaboration with KFN representatives.

In 2022, CNSC staff and KFN representatives started discussions to establish an arrangement for a long-term relationship (the Arrangement) as well as a Project specific Terms of Reference (ToR) for a number of nuclear facilities that are proposed or exist on their unceded lands, including the Micro Modular Reactor, Nuclear Power Demonstration Closure, and Near Surface Disposal Facility projects. The long-term relationship Arrangement was signed on September 29, 2022, with the aim of providing a formalized structure for ongoing dialogue with the CNSC for facilities and activities where KFN has identified concerns in relation to a project's construction or existing operations on their rights, interests, culture, current and traditional uses of their territory. The Project Terms of Reference was signed on June 9, 2023, and aims to provide a mutually determined framework for consultation and Rights Impact Assessment on the Micro Modular Reactor, Nuclear Power Demonstration Closure, and Near Surface Disposal Facility projects.

As part of the Arrangement and ToR, the CNSC and KFN remain in discussions to develop an annual work plan, with the aim that it will provide information on the scope of work, detailed activities, and timelines associated with work items for collaboration, consultation, and engagement. There have been delays in coming to an agreement about the work plan given differing priorities, approaches and understandings of the nature and scope of work which ought to be considered – with the recent Near Surface Disposal Facility hearing highlighting KFN's position regarding ongoing deficiencies in the CNSC's approach to consultation, free prior informed consent and inclusion of Indigenous knowledge within its oversight of nuclear projects.

The CNSC and KFN aim to have a work plan which may include activities that CNSC staff and KFN will work to implement throughout 2024 and beyond, including:

- collaborative annual reporting to the Commission and to the KFN Chief and Council updates and discussions on specific projects and ongoing operations of licensed nuclear facilities of interest
- consultation opportunities, steps, and processes for the Nuclear Power Demonstration Closure Project
- consultation opportunities, steps, and processes for the Global First Power Micro Modular Reactor Project
- enhanced information sharing and communication between the CNSC and KFN members

- ongoing dialogue on the CNSC's approach to the United Nation Declaration Act 2021 implementing UNDRIP (2007) including the Government of Canada's approach to Free, Prior, and Informed Consent for hazardous and natural resource projects to meet CNSC's annual reporting on developments with NRCan and DOJ
- at the November 1, 2023 Commission meeting, Kebaowek suggested a UNDA pilot project, the proposal is part of the 2023 LTRA workplan
- opportunities to comment and review policies and regulations including those related to nuclear safety, non-proliferation, and Indigenous engagement
- engagement and discussions relating to OPG's Darlington New Nuclear Project.

The following facilities covered in this ROR are of interest in the to be developed work plan:

- Chalk River Laboratories
- Nuclear Power Demonstration Closure Project
- Global First Power's Micro Modular Reactor Project
- Near Surface Disposal Facility Project

CNSC staff and KFN are committed to continuing to strengthen the relationship through ongoing, respectful dialogue and the sharing of knowledge, information on culture and history, and perspectives that help CNSC staff learn from KFN. CNSC staff will also continue to have discussions on areas of interest and concern related to CNSC-regulated nuclear activities of interest to KFN.

I5 : Curve Lake First Nation - CNSC Long-term Engagement Terms of Reference

As committed to with Curve Lake First Nation as part of the Terms of Reference for long-term engagement with the CNSC, the update below was prepared in collaboration with Curve Lake First Nation representatives.

In February 2021, CNSC staff and Curve Lake First Nation signed a Terms of Reference (ToR) for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in Curve Lake First Nation's traditional and treaty territories. As part of the ToR, a yearly work plan is developed between the CNSC and Curve Lake First Nation that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. In 2023 the work plan included activities that CNSC staff and Curve Lake First Nation collaborated on to implement throughout 2023 and beyond, including:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)

- Updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- Information, communication, and other topics (i.e. REGDOC updates, feedback on CNSC reporting and processes, funding opportunities, radiation monitoring and cumulative effects)
- Developing a plan for a Curve Lake First Nation Indigenous Knowledge Study

In 2023, due to capacity constraints and other priorities Curve Lake First Nation and CNSC were not able to initiate discussions on developing a plan for an Indigenous Knowledge study. However, Curve Lake First Nation and and CNSC are committed to developing a plan for a Curve Lake First Nation IK Study in 2024. Due to capacity constraints, despite best efforts by Curve Lake First Nation, and funding opportunities made available by CNSC, there are topics and issues that have not been adequately discussed and addressed. Both Curve Lake First Nation and CNSC are committed to an ongoing effort to close such gaps

In 2023, Curve Lake First Nation and CNSC staff continued to meet monthly and work collaboratively to make progress on the agreed upon initiatives in the work plan. Through monthly meetings and interactions, Curve Lake First Nation and CNSC have developed a good working relationship; one that has been conducive to open and direct communications.

Topics of discussion related to Nuclear Power Generating sites in Curve Lake First Nation's territory included ongoing environmental monitoring activities, fish impingement and entrainment at the DNGS and PNGS, OPG's application to authorize operations until 2026 for the PNGS and OPG's application for a licence to construct the Darlington New Nuclear Project including information about the selected technology, applicability of the Environmental Assessment and regulatory review process. Curve Lake First Nation participated in the IEMP sampling for the Darlington site. During the IEMP sampling campaign, Curve Lake First Nation representatives requested that CNSC staff test manoomin (wild rice) harvested from Chemong Lake east of Curve Lake First Nation and shared the cultural importance of manoomin to their communities. Having Curve Lake First Nation representatives participate in the sampling promotes a better understanding of sampling methods and improves input into future sampling in terms of Curve Lake First Nation species of interest, valued components, and potential sampling locations.

Topics of discussion related to Canadian Nuclear Labs sites and facilities in Curve Lake First Nation's territory included updates and information sharing with regards to ongoing CNL projects and sites including Near Surface Disposal Facility, Nuclear Power Demonstration and Chalk River Laboratories and the Port Hope Area Initiative Clean Up Criteria.

In 2023, CNSC staff attended Curve Lake First Nation community events, including the Alternative Routes Career fair in January 2023 and Harvesters Symposium in September 2023.

CNSC staff look forward to continuing to enhance information sharing and communication with Curve Lake First Nation community members and leadership.

In December 2023, CNSC staff had an in-person meeting with Curve Lake First Nation representatives, in their community. CNSC staff provided updates on and an overview of all nuclear facilities and activities in their Treaty and traditional territories.

In 2023, Curve Lake First Nation provided feedback through their intervention on the 2022 RORs and continue to do so through ongoing discussions. CNSC staff have made a number of improvements to CNSC staff reports and documentation based on the feedback, updating the language used throughout CNSC reports and having discussions on how to better incorporate Indigenous Knowledge and perspectives in CNSC's regulatory processes (including Environmental Protection Review Reports). In 2023 CNSC staff and Curve Lake First Nation had focused discussions on the key themes raised in their interventions to the Commission and are working together to discuss and address the issues, concerns and recommendations raised in Curve Lake First Nation's interventions.

CNSC staff and Curve Lake First Nation continue to be committed to strengthening the relationship through on-going respectful dialogue to share knowledge, information on culture, history, Rights and interests and perspectives that help CNSC staff and Curve Lake First Nation learn from each other and improve collaboration and communications. CNSC staff are committed to continuing to have discussions regarding areas of interest and issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to Curve Lake First Nation.

I6: Saugeen Ojibway Nation - CNSC Long-term Engagement Terms of Reference

As committed to with the Saugeen Ojibway Nation (SON) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, CNSC staff prepared the following summary and offered to co-author and validate the text with the SON, who informed CNSC staff that rather than co-author this summary, they would communicate to the Commission directly through an intervention.

A ToR was signed between SON and the CNSC in 2019. The ToR ensures that the SON is provided with adequate and meaningful funding, support, and capacity to participate in consultation and engagement activities required throughout the year. As part of the ToR, a yearly work plan is developed between the CNSC and SON, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement.

In 2023, the work plan included:

- Joint review and analysis of licensee submissions, particularly around environmental protection
- Following-up on the CNSC's 2022 IEMP sampling to share and discuss the results
- Inclusion on the design and review of Bruce Power's study of available mitigation measures for environmental impacts
- CNSC staff outreach in the SON communities
- Sharing the results of CNSC's environmental oversight, such as inspection reports
- Identifying federal, provincial, and municipal decision-making agencies, as needed
- Coordinating meetings with federal and provincial Crown agencies, as needed
- Sharing information on the Western Waste Management Facility, Douglas Point, NWMO's Adaptive Phase Management initiative, OPG's Darlington New Nuclear Project, and Bruce Power's existing and anticipated projects

The work plan sets out detailed tasks and timelines for each of these items. Topics of discussion related to the facilities in this ROR included updates and discussions about the Bruce Nuclear Generating Station existing and anticipated projects, Western Waste Management Facility, Douglas Point, and NWMO's Adaptive Phase Management initiative OPG's Darlington New Nuclear Project.

CNSC staff understand that the SON continue to have concerns regarding the environmental impacts resulting from the nuclear activities at the BNGS, which were presented in their intervention in Bruce Power's licence renewal hearing on March 14, 2018. The focus of the activities in the work plan is to ensure SON oversight, inclusion, and a means to obtain additional information that will provide clarity, transparency and assurances for the communities and the SON leadership regarding the interactions between the BNGS facility and the environment.

In 2023, CNSC staff and the SON continued to meet and work collaboratively to complete a number of the initiatives in the work plan. These activities included CNSC's funding support for a traditional land use and occupancy study to obtain a baseline inventory of mapped cultural sites in relation to the SON's Territory, including the Territory around the Bruce Power site. Due to the pandemic and inability to meet with community members in person, this work has been delayed, however, the SON have informed CNSC staff that data collection is complete, and the report is expected to be complete in 2024.

After completing collaborative work on Bruce Power's mitigation measures study, the SON and CNSC staff have further collaborated on environmental monitoring, mitigation measures, and updates to the CNSC's regulatory framework. In 2023, CNSC staff met with the SON and Bruce Power on mitigation measures used at the Bruce site and emerging technologies to discuss how best to continue to have dialogue on potential options that could be considered in future reviews. As a result, CNSC staff and Bruce Power invited the SON to attend quarterly

environment update meetings with ECCC and DFO to facilitate communication on this topic and better involve the SON in regulatory oversight of the Bruce site.

CNSC staff and members from the SON community participated in the Independent Environmental Monitoring Program sampling campaign for 2022. SON helped to select and provide samples (including fish) that would be meaningful to their community members. As part of IEMP sampling, CNSC staff also conducted some outreach activities as well to explain the program as well as health impacts due to radiation. In 2023, when the IEMP sampling results from 2022 were published, CNSC staff met with the SON to share and discuss the results.

CNSC staff participated in a number of outreach activities with SON. CNSC staff attended the SON's Mothers' Day market, both as an opportunity for the CNSC to learn about and better understand the SON communities, and to interact with SON members to ask questions and learn more about how nuclear energy and radiation is regulated in Canada.

In addition, the SON completed another year of the Coastal Waters Monitoring Program (CWMP), which is an initiative funded in part by Bruce Power, but designed, led, and implemented by the SON to monitor environmental conditions in the nearshore areas of the Saugeen Peninsula. In 2023, the CNSC's Indigenous Capacity Support Fund opportunity opened for the first time, and the SON applied for additional funding to support the administration of their CWMP. SON plans to share with CNSC the 2023 Annual CWMP Report, as has been done in previous years. CNSC staff are interested in the results of the CWMP, as this will provide data that can be used in future environmental risk assessments in relation to the BNGS.

SON has on-going concerns regarding the storage of nuclear waste in their traditional territory. Work is on-going to provide information on how SON can contribute to and participate in the processes around new nuclear projects in Ontario in which waste may be stored at the Western Waste Management Facility, or a potential DGR sited in SON Territory to ensure that their voices are heard and considered in decision making processes.

In 2023, Bruce Power announced their intent to pursue an Integrated Impact Assessment for up to 4,800 MW of new nuclear generating capacity at the Bruce site. The CNSC established a Memorandum of Understanding with the Impact Assessment Agency of Canada (IAAC) in 2019 to conduct Integrated Impact Assessments for projects that are implicated by both the Impact Assessment Act, 2019 and the NSCA. CNSC staff have been collaborating with IAAC to conduct early engagement on the Integrated Impact Assessment process, including presentations to SON's Nuclear Advisory Committee and Environment Office staff. CNSC staff and IAAC have been proactively engaging with the SON on the assessment process for this potential project, as well as providing participant and capacity funding to support the SON. IAAC staff are regularly invited to the monthly meetings established under the SON-CNSC ToR in order to maintain regular communication and lessen the demand on the SON's time and resources.

CNSC staff and SON will continue to work collaboratively to address areas of concern, rights, and interests for the SON in relation to the Bruce site.

I7 : Métis Nation of Ontario - CNSC Long-term Engagement Terms of Reference

As committed to with the Métis Nation of Ontario as part of the terms of reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with Métis Nation of Ontario representatives.

Following the licence renewal hearing for the Bruce Nuclear Generating Station in 2018, a ToR was agreed upon and signed on December 18, 2019, between CNSC staff and the MNO, which formally documents the engagement with their Nation. As the MNO is a province-wide organization, a specific engagement plan under the Terms of Reference was also signed in December 2019 with MNO Region 7.

In 2023, the engagement plans included:

- Participation in the CNSC's IEMP
- Sharing information on NWMO's Adaptive Phase Management initiative
- Sharing information on the NPD project
- Sharing information on SMRs, and GFP's MMR project
- CNSC to support MNO capacity building through new Indigenous and Stakeholder Capacity Fund (ISCF), including the hiring of a community liaison to work with CNSC directly
- Communication with MNO citizens

As per the workplan, CNSC and MNO worked to identify areas of collaboration, including environmental monitoring through the IEMP, providing information relating to the NPD facility and ongoing regulatory monitoring, as well as MNO's potential participation in the FPIRT process. As per the ToR, CNSC staff continued to meet with MNO Lands Resources and Consultations branch on a monthly basis.

I8 : Historic Saugeen Métis - CNSC Long-term Engagement Terms of Reference

As committed to with the Historic Saugeen Métis (HSM) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with HSM representatives. Following the licence renewal hearing for the BNGS in 2018, a Terms of Reference was agreed upon and signed April 12, 2019, between CNSC staff and the HSM, which ensures that HSM is provided with adequate and meaningful funding, support and capacity to

participate in consultation and engagement activities required throughout the year. Topics of discussion related to the facilities in this ROR included updates and discussions about the Bruce Nuclear Generating Station (Major Component Replacement and operational activities including updates on pressure tubes), OPG's Western Waste Management Facility, CNL's Douglas Point decommissioning project and NWMO's Adaptive Phase Management project.

CNSC staff and HSM representatives collaborated on the IEMP sampling campaign that took place around BNGS in 2022. CNSC staff appreciated the HSM's involvement in the Independent Environmental Monitoring Program, through selection of samples and participating in sample collection. Their contributions have helped to strengthen the IEMP monitoring program. In 2023, CNSC staff shared the results of the 2022 IEMP sampling campaign and discussed the results with HSM.

HSM provided a walk in MacGregor Park in June 2023 to share some of the history of the land and HSM's cultural connections to the area. CNSC staff learned more about the area around the Bruce site, including traditional uses and importance of various plant species. CNSC staff also attended the annual HSM Rendezvous in August 2023 to share information about radiation and the CNSC's regulatory oversight of the nuclear industry in Canada.

In 2023, Bruce Power announced their intent to pursue an Integrated Impact Assessment for up to 4,800 MW of new nuclear generating capacity at the Bruce site. The CNSC established a Memorandum of Understanding with the Impact Assessment Agency of Canada (IAAC) in 2019 to conduct Integrated Impact Assessments for projects that are implicated by both the Impact Assessment Act, 2019 and the NSCA. CNSC staff have been collaborating with IAAC to conduct early engagement on the Integrated Impact Assessment process, including presentations to HSM's staff and Council. CNSC staff and IAAC have been proactively engaging with the HSM on the integrated assessment process for this potential project, as well as providing participant and capacity funding to support HSM. IAAC staff are frequently invited to the regular bi-annual meetings with HSM established under the HSM-CNSC ToR, as well as to ad-hoc meetings held on topics of interest to HSM in order to maintain regular communication and lessen the demand on the SON's time and resources.

While the HSM did not have any outstanding concerns related to the nuclear activities on the Bruce site, they continued to actively participate and make informed contributions to address any potential impacts on HSM rights and interests. CNSC staff plan to continue to engage and update HSM on regulatory activities on a semi-annual basis as agreed upon in the Terms of Reference.

The Historic Saugeen Métis continues to value the strong relationship with CNSC staff. HSM and CNSC conduct semi-annual meetings to discuss a broad range of nuclear industry topics, oversight activities and regulatory matters. Additionally, staff provide regular communications with updates and follow-up regarding action items, reportable events, regulatory commenting

opportunities and new information. CNSC staff and HSM are always exploring new ways to share traditional knowledge and culture by organizing walks and lectures to better understand the connections with land and water.

Appendix J : Lost-Time Injury Information

This appendix contains information on the number, frequency, and severity of RLTIs at the CNL sites covered by this ROR, within in formation presented separately for CNL employees and contractors.

J1 : CNL Employees

Frequency and severity are calculated per 100 full-time workers (equivalent to 200,000 worker-hours per year) using the following formulas:

Frequency rate = (# of Lost-Time Injuries) x (200 000 hrs of exposure) / (person hours worked)

Severity rate = (# of Working Days Lost) x (200 000 hrs of exposure) / (person hours worked)

Table J-1: Summary of CRL's Employee RLTIs, frequency, and severity *(Source: CNL)*

Year	2019	2020	2021	2022	2023
Person Hours Worked	5,729,010	5,346,690	5,358,630	5,709,410	5,638,040
Lost-Time Injuries	1	4	3	2	3
Working Days Lost	75	78	4	3	38
Frequency	0.03	0.15	0.11	0.07	0.11
Severity	2.62	2.92	0.15	0.15	1.35

Table J-2: Summary of WL's Employee RLTIs, frequency, and severity *(Source: CNL)*

Year	2019	2020	2021	2022	2023
Person Hours Worked	642,000	584,030	684,000	812,000	769,540
Lost-Time Injuries	0	1	0	0	4

Year	2019	2020	2021	2022	2023
Working Days Lost	0	2	0	0	25
Frequency	0	0.34	0	0	1.04
Severity	0	0.68	0	0	6.50

Table J-3: Summary of PHAI's Employee RLTIs, frequency, and severity *(Source: CNL)*

Year	2019	2020	2021	2022	2023
Person Hours Worked	340,000	421,875	408,630	407,956	502,175
Lost-Time Injuries	1	0	2	0	0
Working Days Lost	33	0	12	0	0
Frequency	0.68	0	1.03	0	0
Severity	22.57	0	6.17	0	0

Table J-4: Summary of DPWF, G1WF, and NPDWF Employee RLTIs, frequency, and severity *(Source: CNL)*

Year	2019	2020	2021	2022	2023
CNL staff at the DPWF, G1WF, and NPDWF sites have not recorded a lost-time injury since 2016.					

J2 : Contractors at CNL Sites

The number of contractor recordable lost-time incidents reported to CNL in 2023 is shown in Table J-5.

CNL records the number of lost-time injuries reported to CNL by their contractors. However, contractor employee hours worked is considered sensitive information and the contractors do not divulge the specific number of hours worked to CNL as their client. Therefore, CNL does not provide frequency and severity rates for contractors since these calculations require hours worked.

Table J-5: Contractor lost-time injuries in 2023 *(Source: CNL)*

Year	CRL	WL	PHAI	DP	G-1	NPD
Lost-Time Injuries (Change from 2022)	0 (-1)	1 (+1)	1	0	0	0

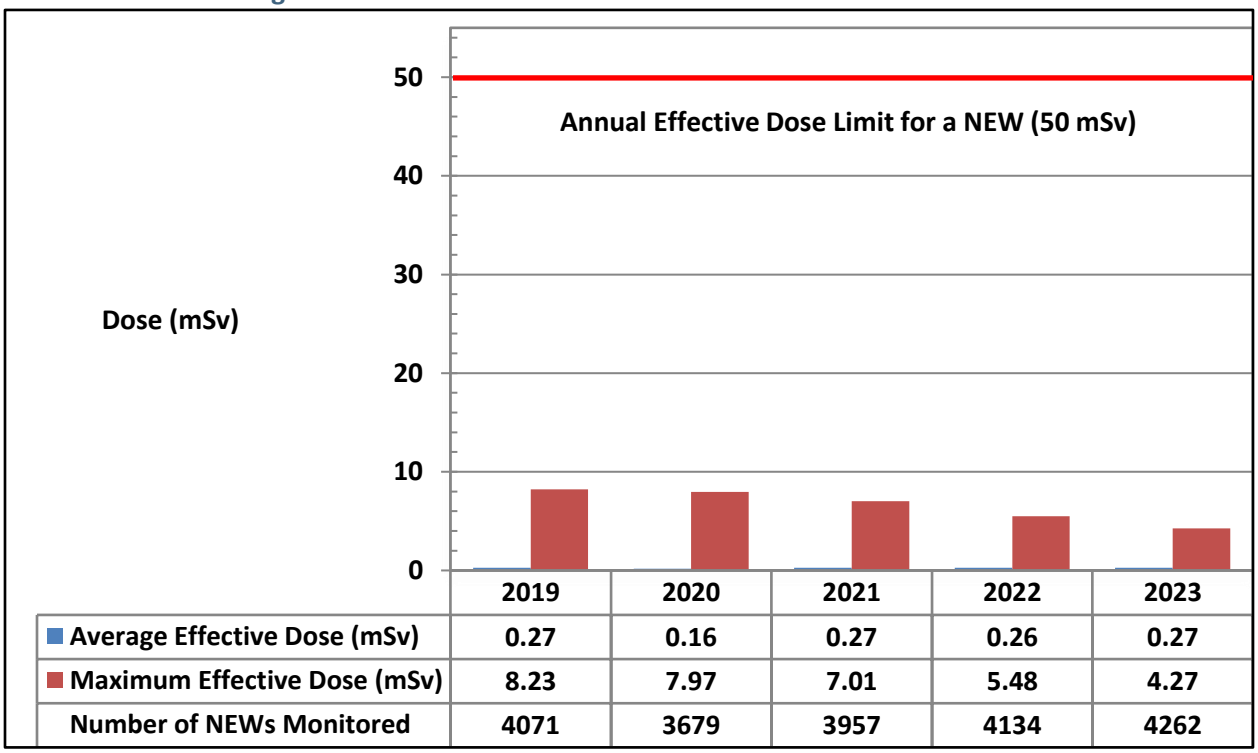
Appendix K : Dose to Nuclear Energy Workers at CNL Sites

This appendix presents information on doses to Nuclear Energy Workers (NEWs) at CNL sites.

K1 : Chalk River Laboratories

Figure K1-1 provides the average and maximum effective doses received by NEWs at Chalk River Laboratories (CRL) from 2019 to 2023.

Figure K1-1: Effective doses for NEWs at CRL from 2019 – 2023



	2019	2020	2021	2022	2023
Average Effective Dose (mSv)	0.27	0.16	0.27	0.26	0.27
Maximum Effective Dose (mSv)	8.23	7.97	7.01	5.48	4.27
Number of NEWs Monitored	4071	3679	3957	4134	4262

The dose fluctuations from year to year are attributed to the scope and duration of the radiological work conducted, along with the dose rates associated with the work. No adverse trends were identified in 2023.

Annual average and maximum equivalent doses to the skin and extremities (hands) for NEWs at CRL from 2019 to 2023 are provided in Tables K1-2 and K1-3.

Table K1-2: Equivalent (skin) doses for NEWs at CRL from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average skin dose (mSv)	0.29	0.19	0.31	0.28	0.29	N/A
Maximum skin dose (mSv)	9.65	9.37	7.43	32	6.76	500 mSv/year

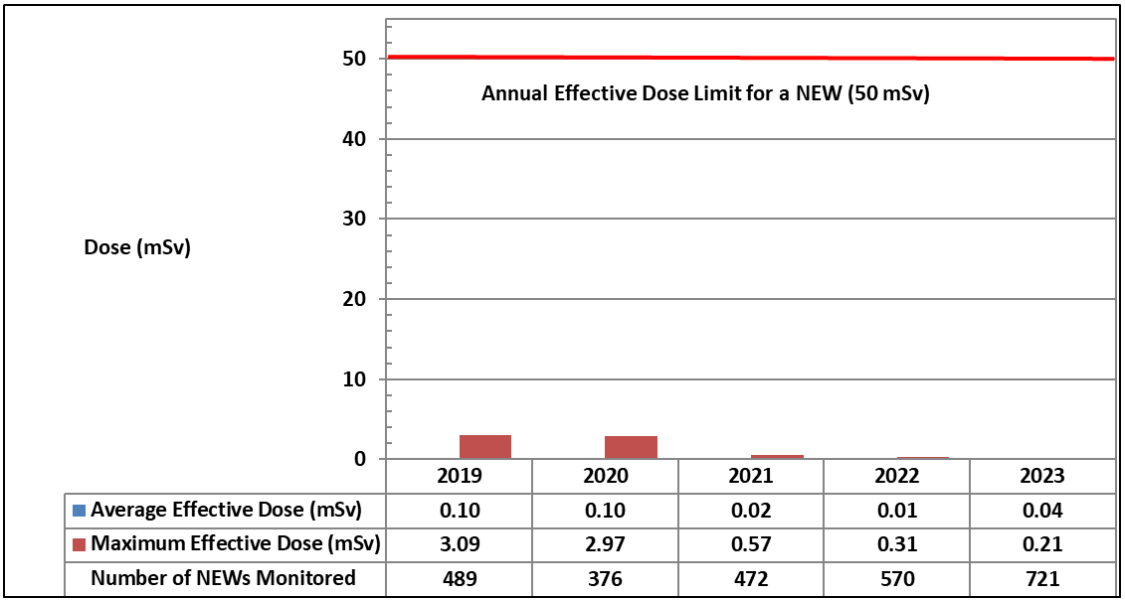
Table K1-3: Equivalent (extremity) doses for NEWs at CRL from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	2.21	1.70	2.02	0.98	1.37	N/A
Maximum extremity dose (mSv)	21.38	11.86	28.30	11.50	13.18	500 mSv/year

K2 : Whiteshell Laboratories

Figure K2-1 provides the average and maximum effective doses received by NEWs at Whiteshell Laboratories (WL) from 2019 to 2023.

Figure K2-1: Effective doses for NEWs at WL from 2019 – 2023



	2019	2020	2021	2022	2023
Average Effective Dose (mSv)	0.10	0.10	0.02	0.01	0.04
Maximum Effective Dose (mSv)	3.09	2.97	0.57	0.31	0.21
Number of NEWs Monitored	489	376	472	570	721

The dose fluctuations from year to year are attributed to the scope and duration of radiological work conducted. Worker doses show a decreasing trend starting in 2021, with the completion of decommissioning activities in Building 200 in 2020, and the safety pause instituted at the WL site in June 2022. Effective doses received in 2023 were mainly due to maintenance activities in the WL shielded facilities.

Annual average and maximum equivalent doses to the skin and extremities (hands) for NEWs at WL from 2019 to 2023 are provided in Tables K2-2 and K2-3.

Table K2-2: Equivalent (skin) doses for NEWs at WL from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	0.20	0.16	0.02	0.02	0.04	N/A
Maximum extremity dose (mSv)	7.47	6.80	0.94	0.66	0.40	500 mSv/year

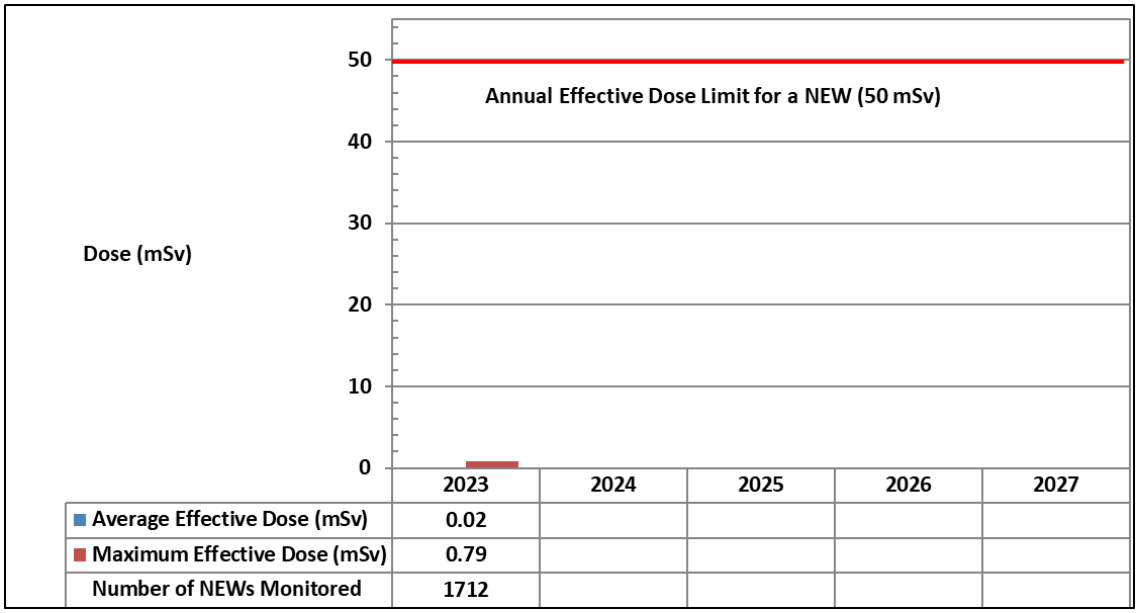
Table K2-3: Equivalent (extremities) doses for NEWs at WL from 2019 – 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	4.80	1.43	0.45	0.27	0.05	N/A
Maximum extremity dose (mSv)	37.77	6.46	1.86	1.38	0.08	500 mSv/year

K3 : Port Hope Area Initiative

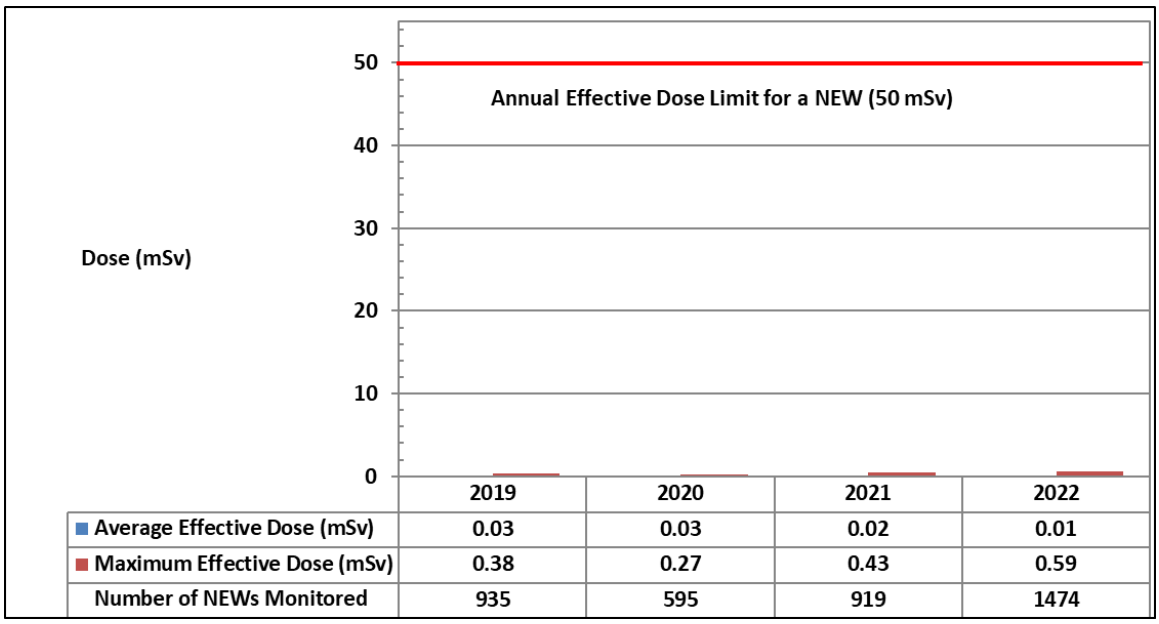
Figures K3-1, K3-2 and K3-3 provides the average effective doses and the maximum effective doses for NEWs at the Port Hope Project (PHP) and Port Granby Project (PGP) from 2019 to 2022 and the Port Hope Area Initiative (PHAI) for 2023. The 2023 effective dose data is combined for all NEWs at the PHP and PGP and will be reported as such going forward.

Figure K3-1: Effective doses for NEWs at the PHAI 2023



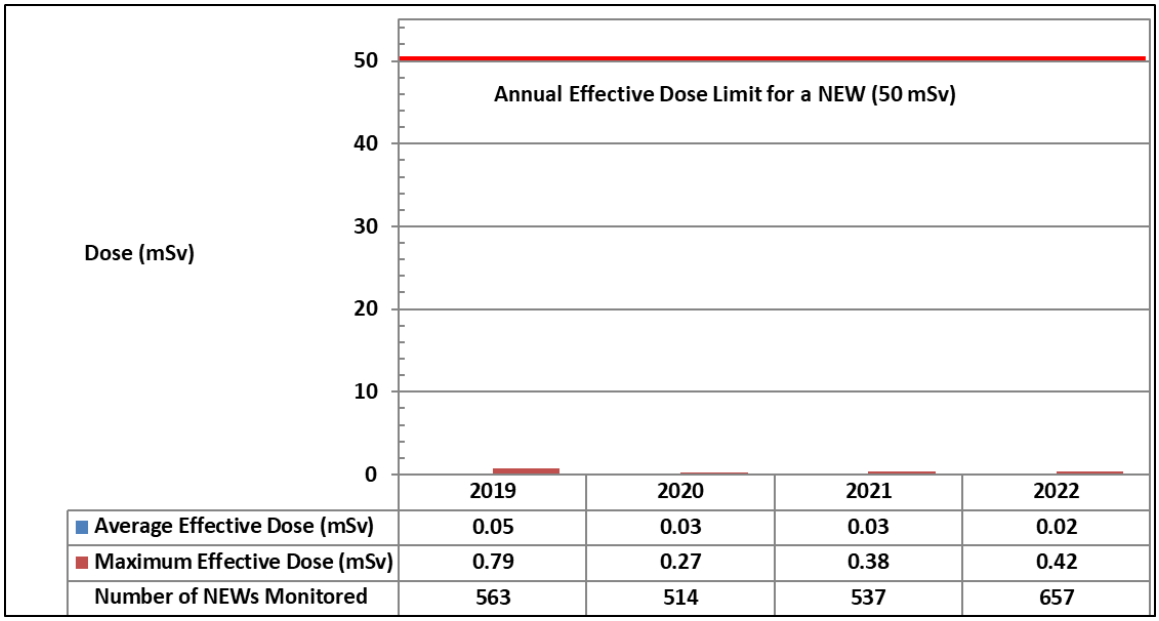
At the PHAI, effective doses are expected to remain low and comparable to previous years.

Figure K3-2: Effective doses for NEWs at the PHP from 2019-2022



	2019	2020	2021	2022
Average Effective Dose (mSv)	0.03	0.03	0.02	0.01
Maximum Effective Dose (mSv)	0.38	0.27	0.43	0.59
Number of NEWs Monitored	935	595	919	1474

Figure K3-3: Effective doses for NEWs at the PGP from 2019-2022



	2019	2020	2021	2022
Average Effective Dose (mSv)	0.05	0.03	0.03	0.02
Maximum Effective Dose (mSv)	0.79	0.27	0.38	0.42
Number of NEWs Monitored	563	514	537	657

Annual average and maximum equivalent doses to the skin for NEWs at the Port Hope Project (PHP) and Port Granby Project (PGP) from 2019 to 2022 and the Port Hope Area Initiative (PHAI) for 2023 are provided in Table K3-4. The 2023 average and maximum equivalent doses data is combined for all NEWs at the PHP and PGP and will be reported as such going forward.

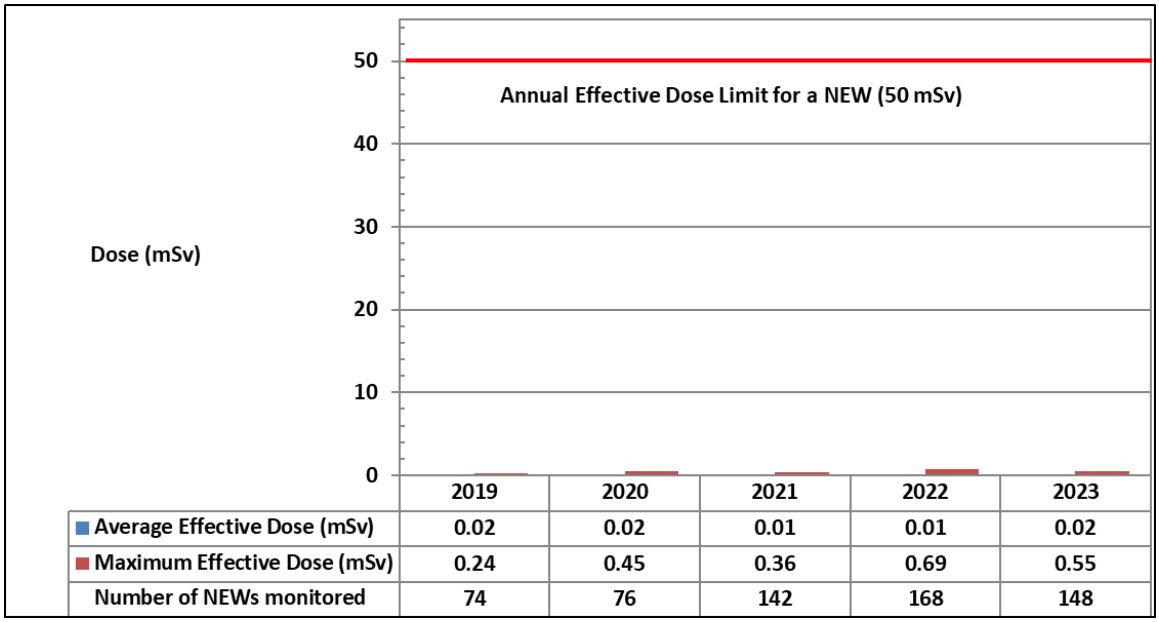
Table K3-4: Equivalent (skin) doses for NEWs at PHAI from 2019 – 2023.

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	PHP: 0.04	PHP: 0.03	PHP: 0.01	PHP: 0.02	0.02	N/A
	PGP: 0.05	PGP: 0.03	PGP: 0.01	PGP: 0.03		
Maximum extremity dose (mSv)	PHP: 0.33	PHP: 0.60	PHP: 0.27	PHP: 0.49	0.64	500 mSv/year
	PGP: 0.79	PGP: 0.27	PGP: 0.45	PGP: 0.49		

K4 : Douglas Point Waste Facility

Figure K4-1 provides the average effective doses and maximum effective doses for NEWs at Douglas Point Waste Facility (DPWF) from 2019 to 2023.

Figure K4-1: Effective doses for NEWs at DPWF from 2019 to 2023



	2019	2020	2021	2022	2023
Average Effective Dose (mSv)	0.02	0.02	0.01	0.01	0.02
Maximum Effective Dose (mSv)	0.24	0.45	0.36	0.69	0.55
Number of NEWs monitored	74	76	142	168	148

Over 2019 to 2023, hazard reduction work activities occurred at the DPWF site. In 2023, characterization work occurred in the Reactor Building, including sampling campaigns of the reactor calandria and process equipment. Outside the Reactor Building, work focused on the non-nuclear buildings including the Steam Bridge demolition and preparations for demolition of the Administration Building, Carpenter Shop, and Turbine Hall in 2024.

Annual average and maximum equivalent doses to the skin for NEWs at the DPWF from 2019 to 2023.

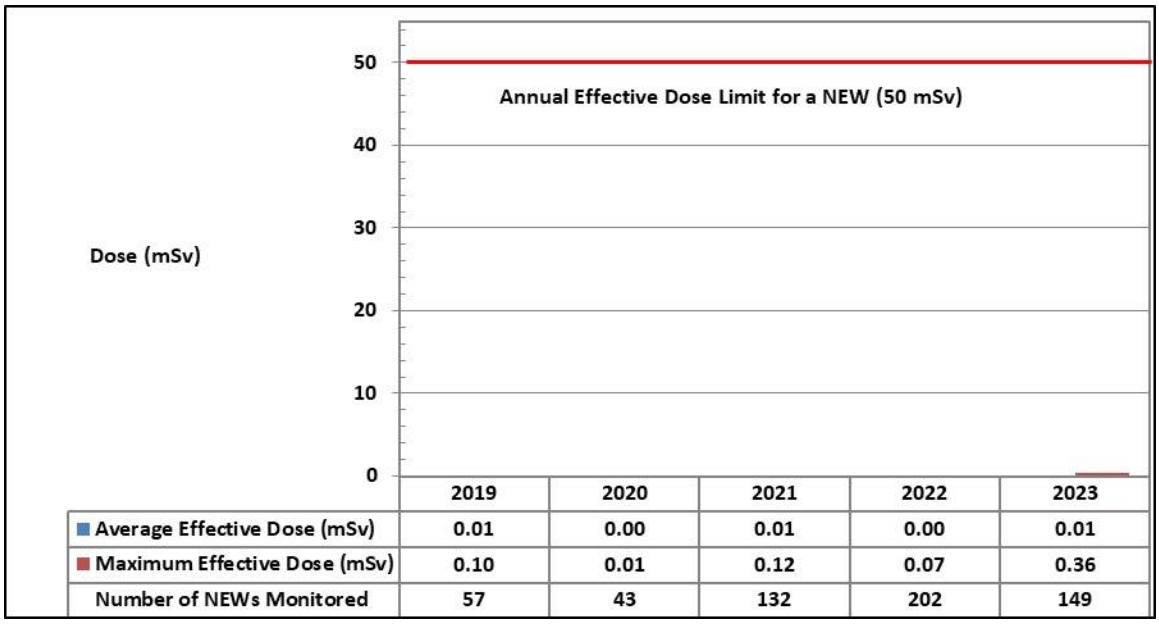
Table K4-2: Equivalent (skin) doses for NEWs at DPWF from 2019 to 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	0.02	0.03	0.01	0.01	0.02	N/A
Maximum extremity dose (mSv)	0.24	0.51	0.45	0.74	0.65	500 mSv/year

K5 : Gentilly-1 Waste Facility

Figure K5-1 provides the average effective doses and the maximum effective doses for NEWs at the Gentilly-1 Waste Facility (G1WF) site from 2019 to 2023.

Figure K5-1: Effective doses for NEWs at G1WF from 2019 to 2023



	2019	2020	2021	2022	2023
Average Effective Dose (mSv)	0.01	0.00	0.01	0.00	0.01
Maximum Effective Dose (mSv)	0.10	0.01	0.12	0.07	0.36
Number of NEWs Monitored	57	43	132	202	149

Over 2019 to 2023, hazard reduction work activities occurred at the G1WF site. In 2023, the spent resin storage structure decontamination project occurred, as well as other work including asbestos abatement, characterization activities, and preparations for spent fuel retrieval and transfer project.

Annual average and maximum equivalent doses to the skin for NEWs at the G1WF from 2019 to 2023 are provided in Table K5-2.

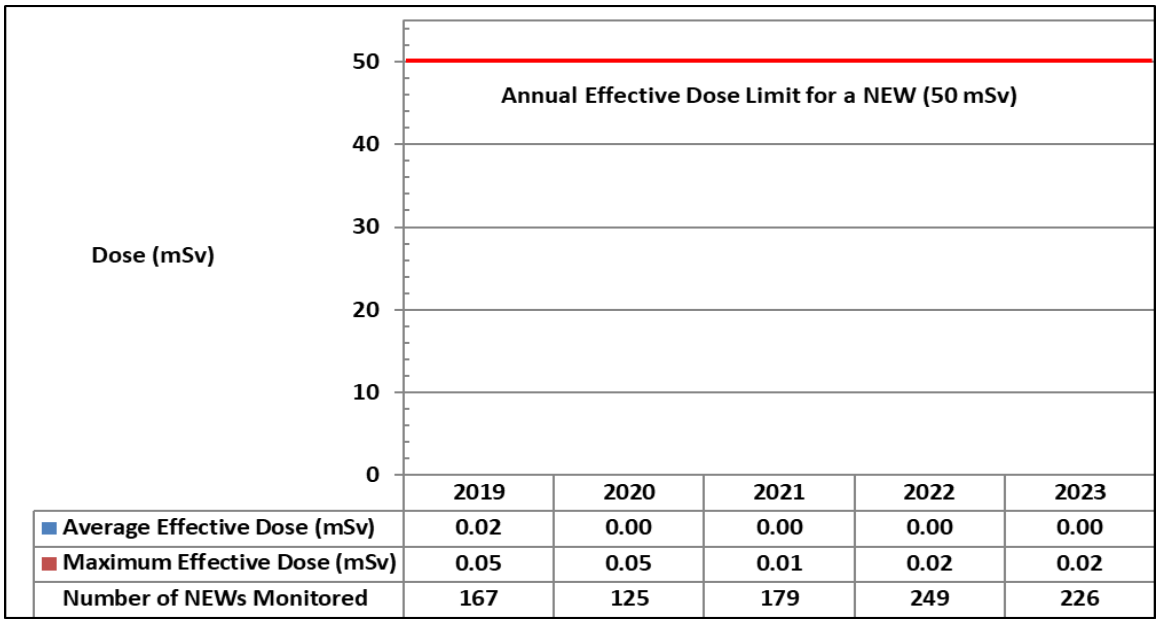
Table K5-2: Equivalent doses to the skin for NEWs at G1WF from 2019 – 2022

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	0.01	0.00	0.01	0.00	0.02	N/A
Maximum extremity dose (mSv)	0.16	0.01	0.12	0.07	0.44	500 mSv/year

K6 : Nuclear Power Demonstration Waste Facility

Figure K6-1 provides the average effective doses and the maximum effective doses for NEWs at the Nuclear Power Demonstration Waste Facility (NPDWF) site from 2019 to 2023.

Figure K6-1: Effective doses for NEWs at NPDWF from 2019 to 2023



	2019	2020	2021	2022	2023
Average Effective Dose (mSv)	0.02	0.00	0.00	0.00	0.00
Maximum Effective Dose (mSv)	0.05	0.05	0.01	0.02	0.02
Number of NEWs Monitored	167	125	179	249	226

Effective doses over these years are consistently low and reflect storage with surveillance (SWS) activities such as routine inspection and maintenance, as well as some hazard reduction activities.

Annual average and maximum equivalent doses to the skin for NEWs at the NPDWF from 2019 to 2023 are provided in Table K6-2.

Figure K6-2: Effective doses for NEWs at NPDWF from 2019 to 2023

Dose Data	2019	2020	2021	2022	2023	Regulatory Dose Limit
Average extremity dose (mSv)	0.02	0.00	0.01	0.00	0.00	N/A
Maximum extremity dose (mSv)	0.05	0.05	0.01	0.02	0.02	500 mSv/year

Appendix L : Participant Funding Awarded for the 2023 Regulatory Oversight Report

CNSC staff provided interested communities with notice of the opportunity for funding through the CNSC's Participant Funding Program to review and comment on this report and the opportunity to submit a written intervention and/or appear before the Commission as part of the Commission meeting.

CNSC awarded approximately $90,256.20 in participant funding to assist the following Indigenous Nations and communities, members of the public and stakeholders in reviewing this ROR and submitting comments to the Commission.

Recipient
Algonquins of Pikwàkanagàn First Nation
Chippewas of Kettle and Stony Point First Nation
Kebaowek First Nation
Manitoba Métis Federation
Mississaugas of Scugog Island First Nation
Canadian Environmental Law Association
Nuclear Transparency Project
Radiation Safety Institute of Canada
Total: $90,256.2

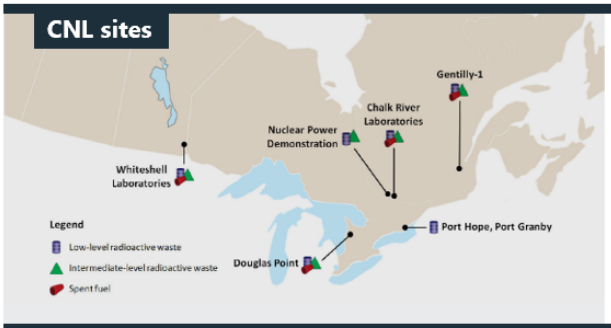
Learn more about the CNSC Participant Funding Program

Appendix M : ROR Dashboard

Regulatory Oversight Report (ROR) Dashboard of Canadian Nuclear Laboratories Sites: 2023

This dashboard gives an overview of the safety performance of Canadian Nuclear Laboratories (CNL) sites and the efforts of the Canadian Nuclear Safety Commission (CNSC) to ensure the safety and protection of the people and the environment around the sites in 2023.

CNL sites



8 CNSC inspectors dedicated to CNL sites

30–40 CNSC staff with regulatory effort at CNL sites

4 CNSC employees working at Chalk River Laboratories site

Safety and control areas (SCAs)

14 SCAs

Whiteshell Laboratories were rated as below expectations for the SCAs of Human Performance Management and Emergency Management and Fire Protection. Other SCAs for this site were rated as satisfactory. All other sites were rated as satisfactory for all 14 SCAs.

3 SCAs of focus in the ROR

1. Environmental protection
2. Radiation protection
3. Conventional health and safety

CNSC staff concluded that all CNL sites operated safely in 2022

Activities

64 International Atomic Energy Agency-led safeguards inspections

33 CNSC inspections

119 CNSC notices of non-compliance (NNCs)

Events

79 reportable events

1 event reported to the Commission

All NNCs did not pose a risk to the health, safety, or security of people and the environment

Maximum doses

Regulatory limit
Estimated dose
Effective dose

The public

0.020 mSv / 1 mSv/y

The maximum estimated dose to the public from any CNL site in 2023 was at the Port Hope Project.

Nuclear energy workers (NEWs)

4.27 mSv / 50 mSv/y

The maximum effective dose received by a NEW in 2023 across CNL sites was at Chalk River Laboratories.

Public outreach

CNSC staff conducted and participated in at least 7 outreach activities with respect to CNL sites in 2023.

Independent Environmental Monitoring Program

In 2023, CNSC staff conducted independent environmental monitoring around Gentilly-1, Nuclear Power Demonstration, and the Port Hope Area Initiative. There were no results of concern.

Licensing actions

In 2023, new versions of the following 4 Licence Condition Handbooks were issued: Port Hope Area Initiative, Chalk River Laboratories, Whiteshell Laboratories, and Nuclear Power Demonstration

Appendix N : Select Websites

Canadian Nuclear Laboratories - http://www.cnl.ca/

Canadian Nuclear Safety Commission - http://www.nuclearsafety.gc.ca

CNL Annual Compliance Monitoring Reports via the CNL website - https://www.cnl.ca/environmental-stewardship/performance-reporting/

CNL Regulatory Oversight Reports via the CNSC website - http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/regulatory-oversight-reports/CNL-sites.cfm

Information on CRL via the CNSC website- http://nuclearsafety.gc.ca/eng/reactors/research-reactors/nuclear-facilities/chalk-river/index.cfm

CSA Group - www.csagroup.org/

CSA Group via the CNSC website - https://nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/csa-standards.cfm

Information on WL via the CNSC website- http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/whiteshell-laboratories.cfm

Information on DPWF via the CNSC website- http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/douglas-point-waste-facility.cfm

Information on G1WF via the CNSC website- http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/gentilly-1-facility.cfm

Information on NPDWF via the CNSC website- http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/nuclear-power-demonstration.cfm

CNSC's SCA framework via the CNSC website-

1.http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/powerindustry/safety-and-control-areas.cfm

2. http://www.nuclearsafety.gc.ca/eng/resources/news-room/feature-articles/safety-and-control-areas.cfm

Action Levels (AL) via the CNSC website- http://www.nuclearsafety.gc.ca/eng/resources/news-room/feature-articles/radiation-dose-limits-release-limits-and-action-levels.cfm

2023 Annual radionuclides via CNSC Open Government Portal- https://open.canada.ca/data/en/dataset/6ed50cd9-0d8c-471b-a5f6-26088298870e

Independent Environmental Monitoring Program (IEMP) via CNSC website- https://www.cnsc-ccsn.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/