



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada

Licence Renewal Application

Whiteshell Laboratories

Canadian Nuclear Laboratories Ltd. (CNL)

CMD 24-H7.A

Commission Hearing
October 23rd, 2024



CNSC Staff
Presentation

e-Doc 7325299 PPTX
e-Doc 7378799 PDF



Presentation Outline

Whiteshell Laboratories Licence Renewal CMD 24-H7.A

▶ Purpose of Hearing

▶ Site Overview

▶ Review of Licence Renewal Application

▶ Regulatory Oversight

▶ Indigenous and Public Engagement

▶ Other Matters of Regulatory Interest

▶ Key Events of this licence period (2020-2024)

▶ Performance Assessment Summary

▶ CNSC Regulatory Oversight Plan for the Next Licence Period (2025-2027)

▶ Interventions

▶ Conclusions and Recommendations



CNL is requesting that the Commission:

- **Renew CNL's Whiteshell Laboratories (WL) decommissioning licence for a period of 3 years starting January 1, 2025, to December 31, 2027**

CNL requested no changes to the terms and conditions of the current licence, or to the currently authorized licensed activities

CMD 24-H7 provides CNSC staff's analysis and recommendations on:

- **CNL's request to renew the Whiteshell Laboratories decommissioning licence** for a 3-year period
- **The proposed Licence Condition 1.2** under the Management System safety and control area

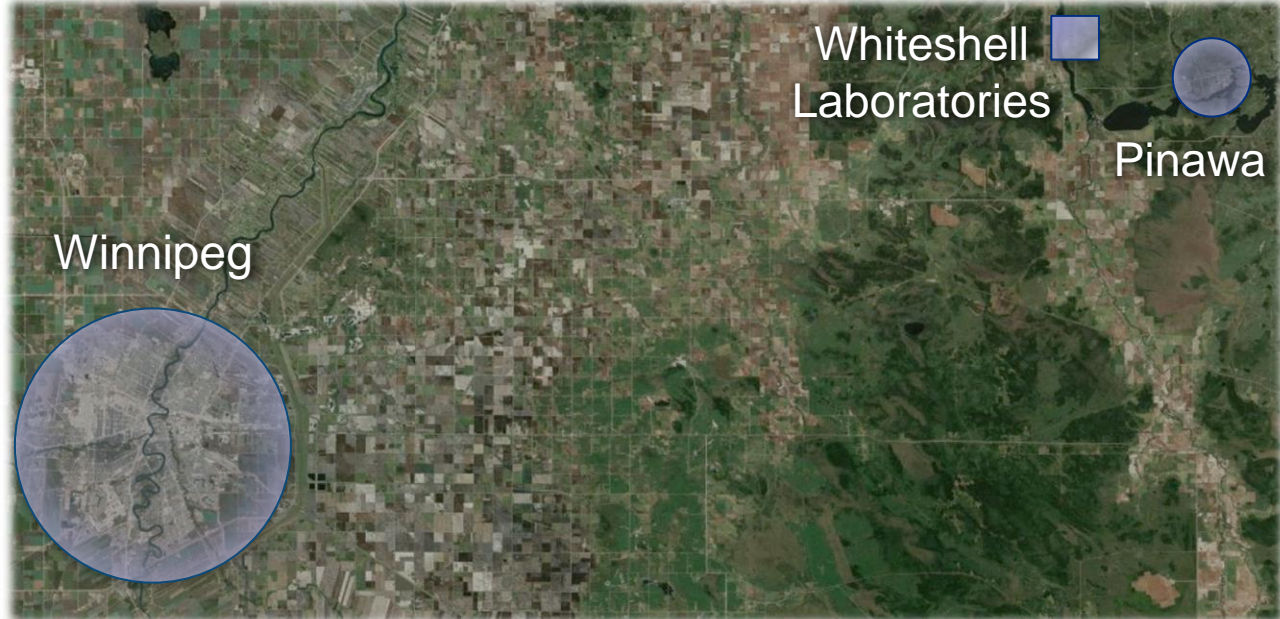
SITE OVERVIEW



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**Approximately 100 km North-East of Winnipeg,
Nearest Town: Pinawa, population 1512, (2021)**





- 1963** - Operations of WL as a nuclear research facility began by Atomic Energy Canada Limited (AECL)
- 1965 to 1985** - Whiteshell Reactor 1 (WR-1) operated for 20 years
- 2002** - AECL was granted a decommissioning licence by the Commission
- 2003** - Operations at WL ended and decommissioning activities began
- 2014** - Commission approved the transfer of the WL licence to CNL. WR-1 reactor in a 'storage-with-surveillance' phase of decommissioning
- 2015 to Present** – CNL has made significant progress in the active decommissioning of the WL site



*Aerial photo of the Whiteshell Laboratories main campus.
Source: CNL*

REVIEW OF LICENCE RENEWAL APPLICATION



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CNL submitted a licence renewal application to the Commission for the renewal of the WL decommissioning licence for a period of 3-years

The proposed In-Situ Disposal (ISD) of WR-1 is not part of this licence renewal application

CNSC staff assessed:

1. CNL's submitted programs against regulatory requirements under the *Nuclear Safety and Control Act, General Nuclear Safety and Control Regulations, Class I Nuclear Facility Regulations* and *Nuclear Security Regulations*
2. CNL's past performance and record of compliance activities for all Safety and Control Areas
3. CNL's Indigenous engagement, community outreach and compliance with public information and disclosure requirements

CNSC staff conclude that CNL's licence application is complete and meets regulatory requirements

REGULATORY OVERSIGHT



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Compliance verification activities included desktop reviews, reviews of event notifications and response, review of follow-up reports, and onsite inspections

CNSC Inspections from January 2020 to August 2024						
	2020	2021	2022	2023	2024	Total
Number of inspections	0*	4	3	4**	6**	17

* COVID-19 pandemic travel restrictions

** additional on-site inspections beyond baseline in response to CNL WL's performance



CNSC staff performing an inspection at Whiteshell Laboratories. Source: CNSC staff

CNSC regulatory oversight is commensurate with the risk posed by the WL site

INDIGENOUS ENGAGEMENT



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Indigenous Engagement

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- Sagkeeng Anicinabe First Nation
- Manitoba Métis Federation
- Brokenhead Ojibway Nation
- Northwest Angle No. 33
- Grand Council of Treaty 3

- Black River and Hollow Water First Nations
- Shoal Lake #40 First Nation
- Iskatewizaagegan #39 Independent First Nation
- Wabaseemoong Independent Nations

Jan 22nd, 2024
Letters of notification for hearing and funding opportunities sent

Jan 25th, 2024
Follow up emails with offers to meet

Mar 7th, 2024
Notice of participant funding opportunity was provided

Mar 2024 to Sept 2024
Meetings with various Indigenous Nations and communities

Jun 6th, 2024
Funding awarded through CNSC's Participant Funding Program

Aug 6th, 2024
CMD links sent to interested Nations



CNSC staff have engaged and collaborated with the identified Indigenous Nations and communities regarding:

- Upcoming Commission meetings or hearings at Community events and information sessions
- The renewal of the WL site and ongoing activities, including Indigenous observation of a CNSC compliance inspection
- CNSC staff's annual CNL Sites Regulatory Oversight Report (ROR)
- CNSC Independent Environmental Monitoring Program (IEMP) sampling campaigns near the WL site



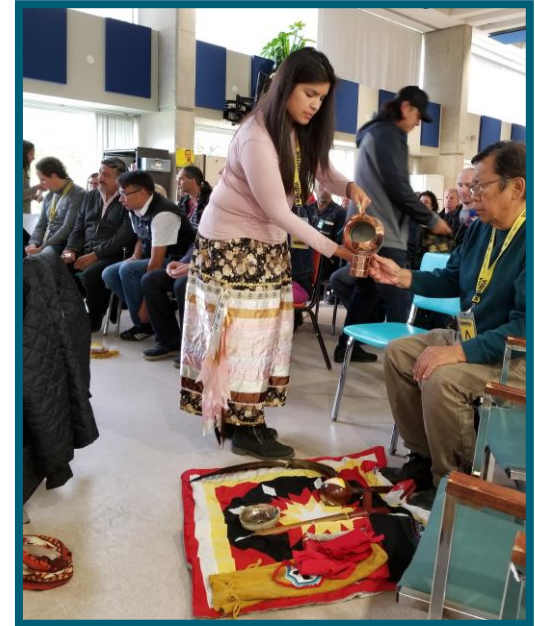
CNSC staff at a community information session in Winnipeg, MB. Source: CNSC

June 2024 - CNSC staff attended the Regional Leadership Gathering to support discussions on the WL site

July 30th, 2024 - CNSC staff participated in a public engagement community meeting hosted by the town of Pinawa, Manitoba

July 31st, 2024 - CNSC staff attended Sagkeeng Treaty Days with an information booth

March-September 2024 – CNSC staff held various meetings with Indigenous Nations and communities



Traditional ceremony put on by the Turtle Lodge at the WL site. Source: CNSC



The CNSC provided the following funding amounts:

\$121,568

for the WL licence renewal application.

Funding was provided to assist Indigenous Nations and communities and members of the public in providing valuable information directly to the Commission.

FUNDING PROVIDED TO:

Manitoba Métis Federation

Sagkeeng Anicinabe First Nation

Black River
and Hollow Water First Nations

The Algonquins of Pikwakanagan
First Nation

Radiation Safety Institute of Canada

Canadian Environmental
Law Association

Northwatch

OTHER MATTERS OF REGULATORY INTEREST



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CNSC staff's assessment:

- CNL's public information and disclosure program **meets the requirements** of CNSC REGDOC 3.2.1, *Public Information and Disclosure*
- CNL **continues to comply** with the *CNSC Cost Recovery Fees Regulations*
- CNL has **adequate nuclear liability insurance** as required by the *Nuclear Liability and Compensation Act*
- CNL maintains a **suitable financial guarantee in place** for decommissioning

KEY EVENTS OF THIS LICENCE PERIOD (2020-2024)



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3 safety stand-downs during the current licence period (2020-2024):

2020 – Adverse trend in human performance of field work activities and a heightened COVID-19 risk

2022 – Safe work practices site safety stand-down

2023 – Site-wide safety stand-down due to fire protection program non-compliances



2023 WL Site Stand-down: Fire Protection Program Non-Compliances (1/2)

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- **Stand-Down Duration: April 2023 – September 2024**
 - Reasons: CNL self-identified that it could not demonstrate that fire response staff were adequately trained and competent
 - Contributing Factors: Deficiencies with procedures for equipment inspection, testing, and maintenance, and unmaintained personal protective equipment
 - WL returned to normal operations on September 16, 2024, after CNSC staff determined that the necessary criteria were met
- **CNL Compensatory Measures:**
 - All non-essential work at WL was ceased and the site was put into a safe stand down state
 - CNL WL Recovery Plan: CNL submitted a multi-phase site restart plan, outlining 8 graduated phases with corrective actions to return to normal operations



Flow test of fire hydrant. Source: CNSC staff

CNSC staff determined that CNL’s corrective actions under its multi-phase restart plan are acceptable in ensuring a safe work environment



2023 WL Site Stand-down: Fire Protection Program Non-Compliances (2/2)

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- **CNSC Actions:**

- In May 2023, a CNSC Designated Officer issued a request under General Nuclear Safety and Control Regulations 12(2) for CNL to conduct a root cause analysis (RCA) after assessing the number and significance of the non-compliances
 - This prompted CNL to submit a multi-phase site restart plan in July 2023 to implement RCA corrective actions
- In June 2023, CNSC staff informed the Commission of this event via an Event Initial Report (CMD 23-M25)
- In October 2023, a CNSC Designated Officer imposed a \$14,860 Administrative Monetary Penalty on CNL following the identification of further non-compliances during an on-site inspection
- CNSC staff reviewed CNL's progress in completing corrective actions from its multi-phase recovery plan and determined that WL was prepared to return to normal operations in September 2024
- CNSC staff have implemented a site-specific regulatory compliance oversight plan for WL to verify CNL's implemented corrective actions from its multi-phase recovery plan
- CNSC staff are proposing an additional licence condition 1.2 to enact increased regulatory scrutiny to improve performance across all 14 SCAs



CNSC Staff Assessing Fire Load in the WL Hot Cells facility. Source: CNSC staff

CNSC staff determined that the risk to the health or safety of persons or impact on the environment from the event as low

PERFORMANCE ASSESSMENT SUMMARY



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SAFETY AND CONTROL AREAS (SCAS)

Management System

Human Performance Management

Operating Performance

Safety Analysis

Physical Design

Fitness for Service

Radiation Protection

Conventional Health and Safety

Environmental Protection

Emergency Management and Fire Protection

Waste Management

Security

Safeguards and Non-Proliferation

Packaging and Transport

Regulatory oversight is performed in accordance with a standard set of safety and control areas (SCAs).

CNSC staff's assessment of CNL White Laboratories' **performance against all 14 SCAs is detailed in CMD 24-H7**. CNSC staff's review includes assessment of non-technical areas like Indigenous engagement and public information programs.

In this presentation, CNSC staff are **highlighting 6 SCAs**



Overall Performance Rating (2/2)

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SAFETY AND CONTROL AREA (SCA)	2019	2020	2021	2022	2023
Management System	SA	SA	SA	SA	SA
Human Performance Management	SA	SA	SA	SA	BE
Operating Performance	SA	SA	SA	SA	SA
Safety Analysis	SA	SA	SA	SA	SA
Physical Design	SA	SA	SA	SA	SA
Fitness for Service	SA	SA	SA	SA	SA
Radiation Protection	SA	SA	SA	SA	SA
Conventional Health and Safety	SA	SA	SA	SA	SA
Environmental Protection	SA	SA	SA	SA	SA
Emergency Management and Fire Protection	SA	SA	SA	BE	BE
Waste Management	SA	SA	SA	SA	SA
Security	BE	BE	BE	SA	SA
Safeguards and Non-Proliferation	SA	SA	SA	SA	SA
Packaging and Transport	SA	SA	SA	SA	SA

SA = Satisfactory

BE = Below Expectations



CNSC staff's assessment:

- No regulatory dose limit or action level exceedances
- Radiation doses received by Nuclear Energy Workers were far below 50 mSv regulatory dose limit and below the 6 mSv CNL radiological action level
- Over the licence period the maximum individual dose was 3.09 mSv in 2019
- Doses are kept As Low As Reasonably Achievable (ALARA)

CNL's radiation protection program is effective and meets regulatory requirements



CNSC staff's assessment:

- CNL's conventional health and safety program applies to all CNL employees and to work performed by others on sites and workplaces controlled by CNL
- CNL's conventional health and safety program meets *Canada Labour Code*
- Conventional health and safety awareness is promoted at Whiteshell Laboratories
- CNL conducted a site stand-down in 2022 and satisfactorily implemented corrective actions to address safe work practices

CNL's conventional health and safety program meets regulatory requirements



CNSC staff's assessment:

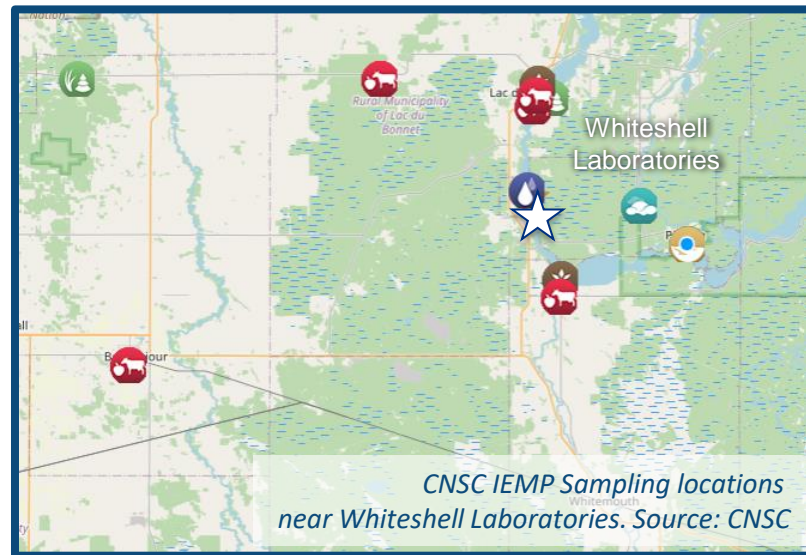
- WL Environmental Monitoring Program consists of three distinct programs to monitor radiological and hazardous releases:
 - Effluent Verification Monitoring Program
 - Environmental Monitoring Program
 - Groundwater Monitoring Program
- WL uses Derived Release Limits (DRLs) and action levels to monitor and control releases
- From 2016-2022, maximum yearly releases to the air and water are at most 0.01% of the regulatory release limits
- Public effective doses are 0.0059% or less of the 1 mSv regulatory dose limit in a year

CNL's environmental
protection program
meets regulatory
requirements

CNSC staff:

- Consulted and collaborated with the following Indigenous Nations on the IEMP:
 - Sagkeeng Anicinabe First Nation (SAFN)
 - Manitoba Métis Federation (MMF)
 - Hollow Water First Nation (HWFN)
 - Black River First Nation (BRFN)
- Focused on detecting and assessing radioactive contaminants
- Collected air, soil, sediment, vegetation, food and water samples in publicly accessible

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The levels of radioactivity in all the samples collected were below available guidelines and CNSC screening levels.

No health or environmental impacts are expected at these levels.



- CNSC staff conducted an environmental protection review (EPR) of the CNL Whiteshell Laboratories licence renewal application per the *Nuclear Safety and Control Act*
- The EPR assessed the environmental and health effects of WL
- Summarizes findings from CNSC staff's review of CNL's site-wide Environment Risk Assessment (ERA) for WL

CNSC staff found that CNL makes adequate provisions for the protection of the environment and the health and safety of persons



CNSC staff's assessment:

- CNSC staff identified deficiencies with the security arrangements at WL and issued an Order in 2018
 - No immediate risk to security of nuclear substances
- CNL implemented a corrective action plan that was reviewed and accepted by CNSC staff, and the issued Order was closed in 2022

CNL's security SCA rating for 2022 and 2023 are **satisfactory** and meets regulatory requirements

CNSC staff's assessment:

CNL has incorporated the requirements of:

- REGDOC 2.2.4, *Fitness for Duty Volume I: Managing Worker Fatigue*
- REGDOC 2.2.4, *Fitness for Duty Volume II: Managing Alcohol and Drug Use*

CNL conducted a 2020 site stand-down due to increased COVID-19 risks and declining human performance trend in fieldwork.

- CNL satisfactorily implemented corrective actions to enhance safe work practices

WL's Fire Protection Program Non-compliances site wide stand-down (April 2023 – September 2024):

- CNSC staff found areas of non-compliance under CNL's personnel training and fitness for duty program related to Systematic Approach to Training (SAT) positions
- CNSC staff reviewed CNL's training specific corrective actions under its multi-phase recovery plan via increased regulatory scrutiny and a WL specific compliance plan and are satisfied

CNL's human performance management SCA performance is rated as **below expectations** for 2023



CNSC staff's assessment:

- CNL's site emergency response plan meets the requirements of CNSC REGDOC-2.10.1, Nuclear Emergency Preparedness and Response
- A WL site safety stand-down occurred from April 2023 to September 2024 due to non-compliances in CNL's fire protection program
 - WL returned to normal operations through CNL's multi-phase recovery plan in September 2024
- CNSC staff reviewed CNL WL's readiness to return to normal operations via increased regulatory scrutiny and a WL specific compliance plan and are satisfied
- CNL's fire protection program meets the requirements of CSA N393-13, Fire Protection for Facilities that Process Handle, or Store Nuclear Substances after implementation of its multi-phase recovery plan

CNL's emergency management and fire protection SCA performance is rated as **below expectations** in 2022 and 2023

REGULATORY OVERSIGHT FOR THE NEXT PROPOSED LICENCE PERIOD (2025-2027)



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CNSC WL Compliance Verification Plan for Increased Regulatory Oversight

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Based on CNL WL's performance, CNSC staff developed a specialized compliance verification plan:

Key components include:

- Expanded scope/frequency of inspections
- More detailed reporting requirements
- More frequent meetings between CNSC staff and CNL
- Additional document reviews

The plan is based on:

- A review of past compliance issues
- Current information on the Whiteshell Laboratories site operations
- The existing CNSC 10-year baseline compliance plan

CNSC staff's implementation of the compliance verification plan is ongoing

The plan applies increased regulatory scrutiny and oversight of CNL's implementation of corrective actions and their effectiveness



Licence Condition 1.2: Integrated Assessment Plan Reporting Requirements

The licensee shall submit to the Commission or any person authorized by the Commission, reports covering the progress of the licensee's integrated assessment plan at Whiteshell Laboratories.

- CNL WL's Integrated Assessment Plan (IAP) provides a 3 year rolling plan for all assessment activities including:
 - Self-assessments,
 - Internal and external audits, and
 - Program reviews
- The proposed licence condition implements increased regulatory scrutiny in reviewing CNL's self-assessments, corrective actions and their effectiveness

INTERVENTIONS



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- A total of 11 interventions were received concerning CNL's application to renew its WL licence
- Interventions identified concerns with the following themes:
 - Indigenous engagement and consultation
 - CNL's safety performance at the WL site
 - CNSC staff's regulatory oversight of WL
 - CNL's WL spent fuel consolidation to its Chalk River Laboratories

CONCLUSIONS AND RECOMMENDATIONS



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Based on the assessments conducted of CNL's application and compliance performance, CNSC staff conclude that:

- CNL's licence application meets the regulatory requirements
- Compensatory measures were adequately implemented by CNL regarding its site safety stand-downs at WL
 - CNL took decisive action to uphold its responsibility to ensure the health and safety of persons and the environment are protected by conducting its site stand-downs
- Despite the below expectations ratings of 3 SCAs, CNL's SCA performance is trending upwards as CNL has made significant improvements to its security, human performance and fire protection programs

CNSC staff will continue to conduct increased regulatory scrutiny in compliance oversight activities and monitoring of CNL's programs



CNSC staff recommend that the Commission:

- 1. Conclude**, pursuant to paragraphs 24(4)(a) and (b) of the *Nuclear Safety and Control Act* (NSCA), **that CNL:**
 - a) is qualified** to carry on the activities authorized by the licence
 - b) will make adequate provision** for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed
- 2. Renew the proposed 3-year NRETDL licence** to authorize CNL to continue its authorized activities at the WL from January 1, 2025, to December 31, 2027
- 3. Approve the proposed licence condition changes** including an additional licence condition 1.2 under the Management System safety and control area outlined in Part 2 of CMD 24-H7
- 4. Delegate authority** as set out in CMD 24-H7



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