Nuclear Energy Canada Inc.

1025 Lansdowne Ave.
Toronto, Ontario Canada

ANNUAL COMPLIANCE MONITORING REPORT

January 1 to December 31
2023

The information contained in this report concerns the performance and operation of BWXT Nuclear Energy Canada Inc.'s (BWXT NEC) Class IB nuclear fuel facility located in Toronto Ontario. This report is prepared to meet fuel facility licence FFL-3621.00/2030 condition 3.2. The content demonstrates adherence to the BWXT NEC commitment to operate a safe Class IB nuclear fuel facility, as well as demonstrate compliance with applicable regulations and licence conditions specified by the Canadian Nuclear Safety Commission.

Revision	Description	Prepared by Date	Approved by Date
00	Initial Issue	EHS Team 2024-03-21	D. Snopek 2024-03-25

Signing Authority Contact Information:

David Snopek, Director, EHS & Regulatory

1160 Monaghan Road

Peterborough, ON K9J 0A8

Phone number: 1-855-696-9588

Email: questions@bwxt.com

Submitted to:

J. Amalraj, CNSC Project Officer on 2024-03-26

1 EXECUTIVE SUMMARY

BWXT Nuclear Energy Canada Inc. (BWXT NEC) has been involved with the Canada Deuterium Uranium (CANDU®) industry from its earliest years. BWXT NEC produces nuclear fuel bundles used by the CANDU fleet to generate clean electricity that powers homes, business, and the Canadian economy. BWXT NEC operates in three plant locations: Arnprior, Toronto and Peterborough, Ontario. BWXT NEC's Toronto and Peterborough facilities are Class IB nuclear facility operations. The operating licence issued by the Canadian Nuclear Safety Commission (CNSC) authorizes BWXT NEC to operate and modify its nuclear fuel facility to produce natural and depleted uranium dioxide (UO_2) pellets in Toronto at 1025 Lansdowne Ave.

The purpose of this compliance report is to demonstrate that BWXT NEC Toronto has successfully met the requirements of the *Nuclear Safety and Control Act*, associated regulations and the Class IB Nuclear Fuel Facility Licence FFL-3621.00/2030 issued by the CNSC on January 1, 2021 and expiring on December 31, 2030. This report is prepared based on the CNSC's regulatory document REGDOC-3.1.2 *Reporting Requirements, Volume I: Non-Power Reactor Class 1 Nuclear Facilities and Uranium Mines and Mills*. Appendices containing confidential, proprietary and prescribed information are submitted to the CNSC separately.

BWXT NEC is committed to continuously improving systems to protect employees, the environment, and our communities against environmental, health and safety hazards. We work to implement programs and objectives to conserve natural resources, prevent pollution and minimize waste. Maintaining a safe and healthy work environment for our employees is a top business priority. BWXT NEC has implemented a business management system that defines the requirements of the Quality Assurance (QA) program for the licensed activity, which ensures applicable buildings and facilities, process equipment, and processes used in support of licensed activities are conducted in accordance with the *Nuclear Safety Control Act*, associated regulations, applicable CNSC requirements, jurisdictional requirements, and compliance best practices.

No significant operational changes occurred. Upgrades were made to programs with the objective of achieving continuous improvement and environmental health and safety excellence. Details are provided in the main sections of this report. Changes made to the physical facilities, equipment, processes, procedures, or practices that could impact employee health and safety, the environment, or the public as a result of the operation of the facility are assessed through the business-wide Change Control program.

BWXT NEC has established CNSC accepted Action Levels for various radiological and environmental parameters. An Action Level is defined in the *Radiation Protection Regulations* "as specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee's radiation protection program, and triggers a requirement for specific action to be taken." Action Levels are also applied to environmental protection. Action Levels are facility-specific and set below regulatory limits; however, exceedances are CNSC reportable events. Accordingly, BWXT NEC has established Internal Control Levels for various radiological and environmental parameters that are set even lower than Action Levels to act as an early warning system. Internal Control Level exceedances result in internal investigation and correction and are not CNSC reportable events.

Employee workplace radiation exposures are measured by CNSC approved methods and systems. Overall, dose trends are favourable and consistent with an effective application of the ALARA (As Low as Reasonably Achievable - Social and Economic Factors considered) principle. All measured radiation exposures received by personnel in the reporting period were within regulatory limits and Action Levels.

BWXT NEC has established conventional health and safety programs to manage the non-radiological workplace safety hazards to protect personnel. Key performance indicators are used to measure the success of the programs throughout the year. There were no lost time injuries during the reporting period, however there was one modified/restricted work case related to an ergonomic concern.

BWXT NEC recognizes that an effective way of maintaining public trust is to maintain environmental excellence. This requires a demonstrated commitment to operating in accordance with the highest environment, health and safety standards. The facility maintains an effective environmental management system to achieve environmental goals and objectives and keep all environmental impacts well within applicable standards and as low as reasonably achievable. This program demonstrates compliance to relevant provincial and federal legislation. The environmental protection program is also compliant with the following standards:

- Canadian Standards Associate (CSA) N288.6-12, *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills*
- CSA N288.5-11, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*
- CSA N288.4-10, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*

Air and water emissions are routinely measured to demonstrate compliance with the CNSC's environmental protection requirements and the ALARA principle. Annual releases were a very small fraction of regulatory limits, and all measurements were below Action Levels. Soil samples were taken surrounding the Toronto facility with all measurements within applicable guidelines.

An established emergency response plan is in place that describes the actions to be taken to minimize health, safety and environmental hazards to workers and local members of the public, which may result from fires, explosions, or the release of hazardous materials. The plan is intended to reduce the risk of emergencies such as fires and assist emergency staff and plant personnel in understanding key emergency response issues. The plan assists the facility in protecting employees, the local community and the environment through sound emergency management practices. The emergency response plan was developed in accordance with CNSC licence requirements.

There were no CNSC reportable events during the reporting period.

BWXT NEC has implemented and maintains a safeguards program and undertakes all required measures to ensure safeguards implementation in accordance with International Atomic Energy Agency (IAEA) commitments and CNSC regulatory document REGDOC-2.13.1 *Safeguards and Nuclear Material Accountancy.* Movement (inventory changes) of natural and depleted uranium are documented and reported to the CNSC as required. The IAEA and the CNSC jointly conduct annual verifications.

BWXT NEC safely transports dangerous goods, including Class 7 radioactive material shipments as governed by the *Transportation of Dangerous Goods* Act and Regulations and the *Packaging and Transport of Nuclear Substances Regulations*. Shipments occur routinely between suppliers and BWXT NEC's Toronto and Peterborough facilities, customers and waste vendors.

BWXT NEC places great importance on its relationships with local Indigenous communities, government, and residents in the communities in which it operates and works to ensure there is open communication and awareness of BWXT NEC's operating activities. The public information program defines the process for providing information about BWXT NEC operations. The Community Liaison Committee (CLC), whose mandate is to provide a forum for a cross-section of neighbours and other community stakeholders to share information and ideas, continued to meet regularly.

This compliance monitoring report demonstrates that BWXT NEC has successfully met the requirements of the *Nuclear Safety and Control Act*, associated regulations and CNSC Class IB Nuclear Fuel Facility Licence conditions.

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2 INTRODUCTION

The purpose of this compliance monitoring report is to demonstrate that BWXT NEC has successfully met the requirements of the Nuclear Safety and Control Act, associated regulations, and the Class IB Nuclear Fuel Facility Licence FFL-3621.00/2030 issued by the CNSC on January 1, 2021, and expiring on December 31, 2030. This report is prepared based on the CNSC's regulatory document REGDOC-3.1.2 *Reporting Requirements, Volume I: Non-Power Reactor Class 1 Nuclear Facilities and Uranium Mines and Mills*. Appendices containing confidential and proprietary information are submitted to the CNSC separately.

BWXT Nuclear Energy Canada Inc. (BWXT NEC) has been involved with the Canada Deuterium Uranium (CANDU®) industry from its earliest years. BWXT NEC produces nuclear fuel bundles used by the CANDU® fleet to generate clean electricity that powers homes, business, and the Canadian economy. BWXT NEC operates in three plant locations: Arnprior, Toronto and Peterborough, Ontario. BWXT NEC's Toronto and Peterborough facilities are Class IB nuclear facility operations. Nuclear substance use is regulated federally by the Nuclear Safety and Control Act and associated regulations through the CNSC.

The current CNSC operating licence authorizes BWXT NEC to operate and modify its nuclear fuel facility. At 1025 Lansdowne Avenue, Toronto (Figure 1), BWXT NEC is authorized for the production of fuel pellets from natural and depleted uranium dioxide.

The facility is located in a residential area with some industrial and commercial buildings in west-central Toronto (Figure 1). Currently, a number of high-rise apartment buildings are under construction immediately west of the facility and are set for occupancy in 2024.

The facility consists of two separate buildings, which are identified as Building 7 and Building 9. Building 7 houses uranium dioxide pellet manufacturing on the first, second and third floors and office space on the fourth floor. Building 9 is a warehouse used for the storage of uranium dioxide as miscellaneous scrap awaiting reprocessing or shipment for disposal, compaction of waste, and decontamination activities.

Figure 1: BWXT NEC Toronto

2.1 Processes and Materials

The facility processes natural and depleted UO_2 powder into fuel pellets. Specifically, UO_2 powder is received in standard steel drums and the powder is compressed into "slugs" and granulated to a free-flowing powder. This powder is pressed into a pellet shape and the sintered pellets are ground to the required diameter, inspected and wrapped for shipment to the Peterborough facility. BWXT NEC also may periodically ship natural uranium pellets to the United States of America for use in Boiling Water (BWR) commercial power reactors, although no such shipments were made in the reporting period. See Figure 2 for the process.

Uranium Dioxide
Fuel Pellet Fabrication Flow

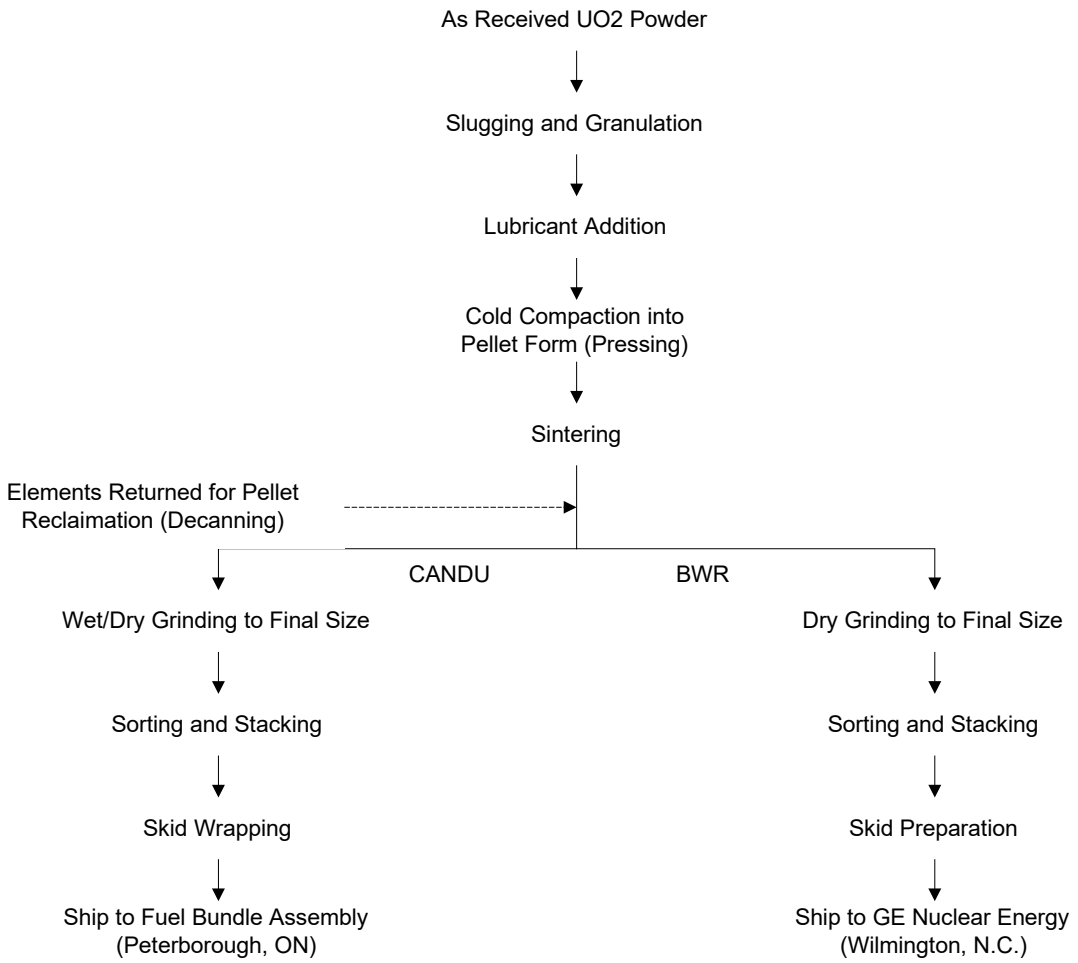

Figure 2: Uranium Fuel Pellet Manufacturing Process

BWXT NEC is federally regulated for health and safety. The federal health and safety legislation is the *Canada Labour Code Part II and the Canada Occupational Health and Safety Regulations*. The *Canada Labour Code* is enforced by Employment and Social Development Canada. The purpose of Part II of the *Canada Labour Code* is to prevent accidents and injury to health arising out of, linked with or occurring in the course of employment. BWXT NEC facilities are also regulated federally by Transport Canada. BWXT NEC is additionally regulated environmentally through municipal sewer use bylaws and provincially by the Ontario Ministry of the Environment, Conservation and Parks (MECP).

BWXT NEC is committed to the establishment and continuous improvement of a healthy safety culture. Safety culture refers to the core values and behaviours resulting from a collective commitment by our company's leaders and individuals to emphasize safety, quality, ethics, and security over competing goals to ensure protection of people and the environment. The Environment, Health and Safety (EHS) Mission Statement defines it as a top business priority to continuously improve our EHS systems to protect fellow employees, the environment, and our communities against known and potential environmental, health and safety hazards. The BWXT NEC management team reviews, prioritizes and controls workplace hazards and ensures compliance with the pertinent regulatory requirements, applicable codes and company policies.

The primary potential radiological hazard from uranium at the facility is the inhalation of airborne UO_2 particles. Measurements are performed for airborne and surface traces of uranium as an indicator of process containment efficiency. Urine samples provided by employees are used to indicate if inhalation may have occurred. A lesser potential radiological hazard exists in the form of low-level external gamma and beta radiation exposure to employees. Whole body, skin, eye and extremity dose measurements are conducted to demonstrate compliance with the dose limits specified in the *Radiation Protection Regulations* and the ALARA principle. All dose measurement results for employees were below regulatory limits and Action Levels.

Air and water emissions are routinely measured to demonstrate regulatory compliance and the ALARA principle. Annual releases were a small fraction of regulatory limits, and all measurements were below Action Levels.

Table 1 defines the acronyms used in this report.

Acronym	Definition
ALARA	As Low as Reasonably Achievable (social and economic factors considered)
ATS	Action Tracking System
BWXT NEC	BWXT Nuclear Energy Canada Inc.
CANDU®	CANadian Deuterium Uranium
CCAB	Canadian Council for Aboriginal Business
CCME	Canadian Council of Ministers of the Environment
CLC	Community Liaison Committee
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
CTS	Critical-to-Safety
dpm	Disintegrations per minute - unit of measure for radioactivity 1 dpm = 0.017 disintegrations per second/Becquerel

Acronym	Definition
EHS	Environment, Health and Safety
FHA	Fire Hazards Analysis
IAEA	International Atomic Energy Agency
MECP	Ministry of the Environment, Conservation and Parks
MP	Member of Parliament
MPP	Member of Provincial Parliament
mSv	milliSievert – unit of measure for radiation dose 1 mSv = 0.001 Sv = 1,000 µSv
NEW	Nuclear Energy Worker
PAR	Progressive Aboriginal Relations
PDP	Preliminary Decommissioning Plan
POI	Point of impingement
ppm	Parts per million
QA	Quality Assurance
SSC	Systems, structures and components
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
UO_2	Uranium Dioxide
µSv	microSievert – unit of measure for radiation dose 1 µSv = 0.001 mSv = 0.000001 Sv
WSC	Workplace Safety Committee

Table 1: Definition of Acronyms

3 SAFETY AND CONTROL AREAS

3.1 Operating Performance

The "Operating Performance" Safety and Control Area covers an overall review of the licensed activities.

BWXT NEC has successfully implemented and maintained a program for safe operation of the facility and reflects the Facility Safety Analysis. BWXT NEC has established essential documentation (as specified by the Business Management System) including procedures describing the program or system process and work instructions outlining the steps required to complete an individual or set of tasks. This includes the written work instructions for handling of radioactive materials by workers to ensure activities are conducted in a manner that is protective of workers, the public and the environment; as well as full and accurate records to show the acquisition of nuclear substances, inventory of all radioactive nuclear substances and the disposition of all nuclear substances acquired for use or processed by BWXT NEC.

Over the reporting period, BWXT NEC continued to operate in a manner that supports the company mission to continuously improve EHS systems to protect fellow employees, the environment, and communities against known and potential environmental, health and safety hazards. Operating performance is monitored with key performance indicators and program goals. Reporting of EHS-related concerns is encouraged through a rewards program. These are assigned and tracked to completion in the Gensuite® software system and is used as a measure of employee engagement. In accordance with EHS program requirements, internal audits and self-assessments are conducted routinely to assess conformance to internal and external requirements. Related licensed activity audits and self-assessments are summarized in subsequent sections.

The BWXT NEC management team continued to review, prioritize, and control workplace hazards and ensure compliance with the pertinent regulatory requirements, applicable codes, and company policies.

Facility operations continued routinely and safely. Plant personnel followed procedures satisfactorily, as reflected in internal and external audits, self-assessments, radiation surveys, contamination monitoring, air sampling measurements and other safety inspections. Details are provided in subsequent sections of this report. There were no Action Level exceedances or reportable events over the reporting period.

The President of BWXT NEC is responsible for all activities within the company. The various functional groups, such as EHS, Quality and Communications report directly or indirectly to the President. Senior Management accountability for the effectiveness of the management systems is defined. The Director, EHS & Regulatory is responsible for the overall EHS program.

BWXT NEC Toronto maintains four EHS related committees that review activities including proposed changes to ensure safe plant operations. They are:

- Health and Safety Policy Committee - comprised of unionized workers and management to contribute to making the company as safe as possible by promoting health and safety awareness, making recommendations to workers and management regarding policies and procedures for safe working practices.
- Workplace Safety Committee (WSC) - comprised of unionized workers and management to prevent accidents and occupational illness by promoting health and safety awareness, making recommendations to workers and management regarding safe work practices and monitoring health and safety issues until resolved.
- As Low as Reasonably Achievable (ALARA) Committee - comprised of unionized workers and management to continuously improve the radiation safety program and implement ALARA practices where practical to ensure that radiation doses are as low as reasonably achievable.
- Ergonomics Committee - comprised of unionized workers and management to develop, monitor and administer the ergonomic procedure and recognize, reduce and where possible eliminate physical and cognitive ergonomic risk factors.

3.1.1 Possession and Processing

All possession and processing limits, as specified in the CNSC facility operating licence were met. Production data is proprietary and is provided separately to the CNSC in Appendix A.

Production shutdowns were scheduled periodically throughout the year for engineering projects, equipment maintenance and continuous improvements. In the reporting period, there were five weeks of production shutdown, including one week in the first quarter, three weeks in the third quarter and one week in the fourth quarter.

3.1.2 Regulatory Inspections

Excluding safeguards related inspections, which are described in section 3.13 of this report, the CNSC completed four routine inspections during the reporting period.

1. An inspection was completed in January, focused on Radiation Protection. Three non-conformances were issued, and one recommendation. One non-conformance was regarding the update of the NEW declaration form, and two regarding ascertainment of equivalent doses to the lens of the eye and to the hands and feet, both to ensure compliance with the dose limits in the revised Radiation Protection Regulations. One recommendation was issued, regarding the use of the appropriate fixed five-year dosimetry period to track five-year effective doses for NEWs.
2. An inspection was completed in March, focused on Security. One non-conformance and five recommendations were issued. The actions are of low security significance and do not pose an immediate threat to security.
3. A third inspection was completed in May, concerning the human performance Safety Control Area (SCA), with emphasis on training. Three notices of non-conformance and one recommendation was made. The actions are of low safety significance, regarding documentation and clarity of requirements and do not pose immediate risk to people or the environment.
4. The final inspection was completed in October, focusing on Waste Management and Conventional Health and Safety. Two recommendations of low safety significance were issued, one regarding a label, and a second concerning a review of acid handling procedures.

In addition,

1. The Technical Standards and Safety Authority (TSSA) completed an inspection concerning elevating devices (passenger elevator) in November. No non-compliances or recommendations were made.

All corrective and preventive actions related to non-compliances are submitted to the regulator and tracked to closure.

3.2 Management System

The "Management System" Safety and Control Area covers the framework which establishes the processes and programs required to ensure that the organization achieves its safety objectives and continuously monitors its performance against these objectives, as well as fostering a healthy safety culture.

The management system defines the requirements of the quality assurance program for the licensed activity, which ensures applicable buildings and facilities, process equipment, and processes used in support of licensed activities, are conducted in accordance with the Nuclear Safety Control Act and associated regulations, applicable CNSC requirements, jurisdictional requirements, and compliance best practices. A graded approach is used in the application of the management system program elements, such that the requirements are applied in a manner commensurate with the safety significance of the licensed activity, system, component, or structure. The management system is comprised of the following core program elements:

1. Organization and Responsibilities
2. Personnel Capability
3. Use of Experience
4. Work Planning Control

5. Work Processes Control
6. Verification
7. Problem Identification and Resolution
8. Corrective Action
9. Change Control
10. Document Control and Records
11. Audits
12. Management Self-Assessment
13. Management Program Review
14. Supply Chain

The President of BWXT NEC is responsible for all activities within BWXT NEC. Operations and the various functional groups, such as Environment Health and Safety, and Quality Assurance, report directly or indirectly to the President.

Senior Management accountability for the effectiveness of the management systems has also been defined. For example, the Quality Manager has been assigned the responsibility for monitoring and assessing the effectiveness of the business licensed activity management system and is responsible for identifying problems, initiating or recommending solutions, and confirming their implementation and effectiveness. The company senior management organization structure is shown in Figure 3.

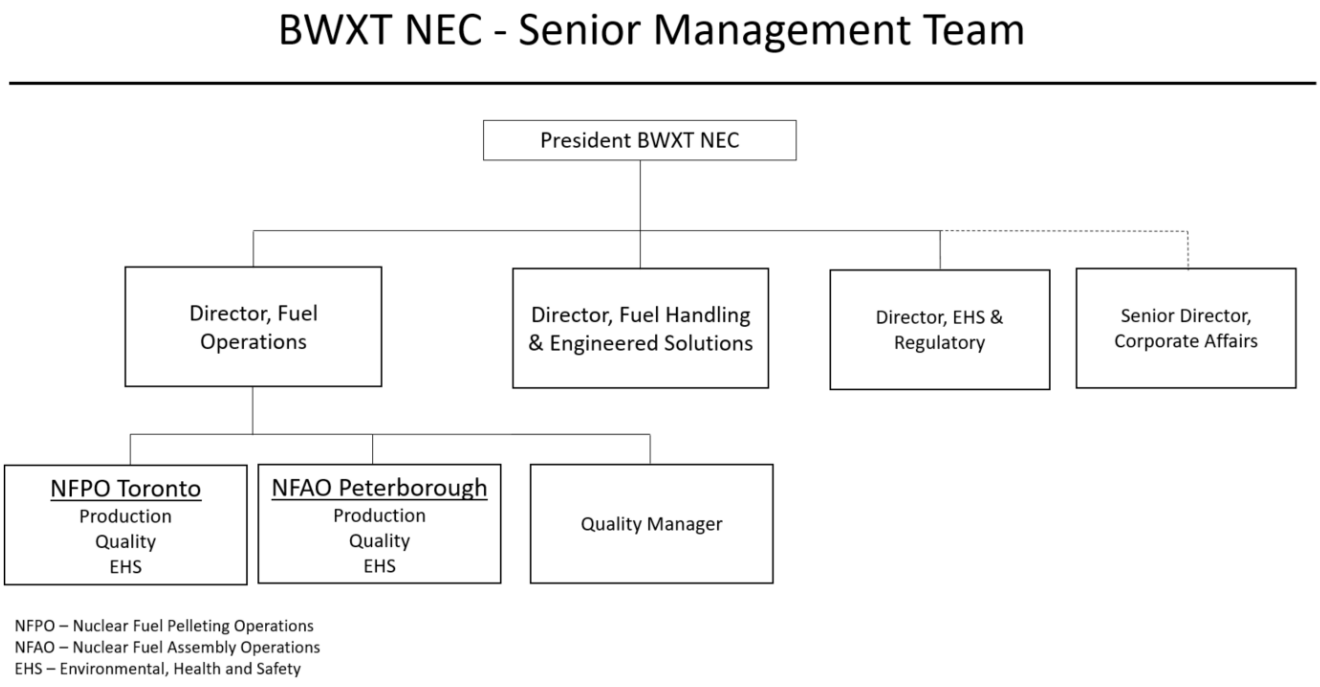

Figure 3: BWXT NEC Organization Structure

The management system is fully implemented and compliant with CSA N286-12, *Management System Requirements for Nuclear Facilities*. All management system documentation required by licence condition 2.1 is in place. The EHS Policy establishes the direction for the management system. Continuous improvement is achieved through several review processes, including self-assessments, audits, and management reviews. There were no major changes to the management system or responsibilities during the reporting period.

BWXT corporate policy describes BWXT's commitments to the establishment and continuous improvement of a safety culture. The safety culture refers to the core values and behaviors resulting from a collective commitment by BWXT NEC leaders and individuals to emphasize safety, quality, ethics and security over competing goals to ensure protection of people and the environment.

BWXT NEC is committed to maintaining a strong safety culture and clearly states the expected safety culture behavior. For example, the promotion of a standard set of human error reduction tools for job-site workers and knowledge workers, which include:

1. Procedure Use and Adherence
2. Questioning Attitude
3. Situational Awareness
4. Self-Checking

BWXT NEC's commitment to a strong safety culture is measured by tools such as employee concerns, incident investigations, audits and self-assessments, use of experience and corrective action program metrics which measure the effects of safety culture improvements. External agencies such as the CNSC audit BWXT NEC operations against CSA standards which include safety culture requirements (e.g., CSA N286-12).

In the reporting period, there were no major program changes. Where required, revised documents were submitted to CNSC staff in accordance with the requirements in the licence conditions handbook.

3.2.1 Licensed Activity Related Self-Assessments

The Self-Assessment program governs a proactive process for self-critical, candid, and objective evaluation of performance by a functional area measuring their process performance against internal procedures, expectations, goals established from business plans or external benchmarking standards. The Self-Assessment Program is a management tool used to engage the workforce in early and proactive detection of organizational or systematic weaknesses. It is a functional manager's opportunity to take a structured look at their own function. Self-Assessments help identify low level issues or trends for early resolution before more significant problems occur.

A Self-Assessment schedule is prepared annually and ensures that each program element is reviewed periodically based on a risk-related approach. A summary of self-assessments conducted in the reporting period is provided in Table 2. The identified deficiencies were of low consequence, with the majority related to improvements in documentation accuracy and compliance, as well as record keeping. All identified deficiencies not corrected during the assessment were assigned and are being tracked to closure, if not closed already. There were no systemic deficiencies identified. The assessed program elements were determined to be effective.

In addition to the Self-Assessment program, routine compliance reviews are periodically completed against regulatory EHS requirements, such as general environmental, water management, safety management and emergency response.

Program Element	Number of Non-Conformances
Work Planning, Control and Verification	0
Radiation Protection	3
Emergency Preparedness	2
Respiratory Protection	3
Non-Conformance and Corrective Action	4
Total	12

Table 2: Summary of Self-Assessments

3.2.2 Licensed Activity Internal Audits

Internal auditing is an independent, objective activity designed to add value and continuously improve programs. Periodic assessment of program effectiveness is conducted through systematic internal audits that are planned and carried out on behalf of management to measure performance, the effectiveness of the program element processes and to promote continuous improvement. An audit schedule is prepared annually and ensures that each licensed activity program element as per program requirements.

Table 3 provides a summary of internal audits conducted in the reporting period. The identified non-conformances were of low consequence, with the majority related to the accuracy and detail in documentation and implementation of practices. All identified non-conformances not corrected during the audit were assigned and are being tracked to closure, if not already closed. There were no systemic deficiencies identified. The assessed program elements were determined to be effective.

In addition, a summary review of all non-conformances is conducted as part of the management review to determine if any systemic deficiencies have been identified. Based on the review, continuous improvement opportunities are discussed and documented in meeting minutes with actions tracked to closure.

Audit Scope	Number of Non-Conformances
Internal EHS Auditing Program	4
Total	4

Table 3: Summary of Internal Audits

3.2.3 Management Reviews

Management reviews for EHS program elements are conducted annually before the end of April each year to review the previous calendar year activities. The EHS management reviews encompass the following items:

- Status and follow-up of actions from previous management reviews;
- Results of applicable external agency audits;
- Open regulatory compliance obligations;
- Results of “Reg Auditor” (Gensuite®) compliance evaluations;
- Results of QA for licensed activity internal and external audits (where applicable);

- Results of QA for licensed activity management self-assessments;
- Trends in non-conformances (Gensuite® Action Tracking System items) for closure metrics;
- EHS related QA Actions;
- Trends in Incident and Measurement (Gensuite®) items for root cause;
- Status of EHS training activities;
- Procurement process;
- Extent to which Environmental, Health and Safety and ALARA objectives and targets have been met;
- Radiation dose trends;
- Communications and changes in the needs and expectations of interested parties, including complaints;
- Changing external and internal issues, including compliance obligations;
- Changes in risks and opportunities;
- Opportunities for continual improvement;
- Evaluation of the effectiveness and continuing suitability of the EHS Mission Statement and the Environment, Health and Safety Program, which includes the EHS management system and hazard prevention program.

The above inputs are reviewed to ensure continuing suitability, adequacy and effectiveness of the management system. The criteria for these are:

- **Suitable**: Does the system satisfy the requirements and represent the best way of doing things for our business?
- **Adequate:** Is the system fit for its current purpose?
- **Effective:** Does the system enable the right things to be done? Is it driving continuous improvement?

Formal meeting minutes are prepared. The previous management review meeting resulted in four actions that were formally issued for follow-up by the applicable functional lead(s) and were tracked to closure in the Action Tracking System (ATS). The first action involved improving the method of scheduling the Annual Self Assessments. The second action involved investigating the effect of direct sunlight exposure on Environmental TLDs. The third action involved a plan to increase the on-time closure of Gensuite® Action Tracking System items. The fourth action involved a minor updated in BMS level documentation. No systemic deficiencies were noted. Overall, the implemented management system for the licensed activity program was considered suitable, adequate and effectively implemented. Continuous improvement remains a priority.

3.3 Human Performance Management

The "Human Performance Management" Safety and Control Area covers activities that enable effective human performance, through the development and implementation of processes that ensure that BWXT NEC staff members are sufficient in numbers in all relevant job areas, and have the necessary knowledge, skills and tools in place to safely carry out their duties.

The training program is outlined in the licensed activity management system manual, and business-wide training procedures. Qualifications and training requirements are identified, and personnel are given the

appropriate training to ensure they are competent at the work they do. This training includes on-the-job training, radiation safety and respirator protection training. Workers only perform functions for which they are qualified. The Toronto facility achieved 100% regulatory training completion in the reporting period. Compliance to regulatory training completion is a key performance indicator that is tracked throughout the year. Key EHS course completion details are provided in Table 4. Note: n/a indicates that zero employees required the course during the reporting period.

Course Name	% Complete
Aerial Lift Practical	100%
Aerial Lifts	100%
Change Area Contamination Control	n/a
Compressed Gas Safety	100%
Electrical Safety 2.0 – Canada	100%
Emergency and Disaster Preparedness – Canada	n/a
Emergency Response & Fire Prevention Awareness	100%
Fall Protection Advanced	n/a
First Aid (Emergency Response Team)	n/a
Indoor Hoisting and Rigging – Canada	100%
Lockout Tagout (LOTO) Procedure	100%
Lockout/Tagout 2.0 – Canada	100%
Lockout Tagout (LOTO) Try-Out Demonstration	100%
Portable Fire Extinguishers – Canada	100%
Powered Industrial Truck - Driving Evaluation	100%
Radiation Safety	100%
Respiratory Protection 2.0 - Canada	100%
Security Awareness	100%
Transportation of Dangerous Goods	100%
Workplace Hazardous Materials Information System (WHMIS)	100%

Table 4: Key Training Course Completion Summary

During the reporting period there were opportunities to improve training. Examples of these include:

- Improvements were made to the Training Needs Analysis and Job and Task Analysis for the SAT program “Maintenance Supervisor”.
- Additional employees were trained for Emergency Response roles, including Radiation Technician and Group Leader.

The facility is staffed with a sufficient number of qualified workers as well as the minimum number of responsible people to carry on the licensed activities safely and in accordance with the Nuclear Safety and Control Act and associated regulations. EHS and other staff are available after business hours as needed through cell phones and paging devices.

3.4 Safety Analysis

The "Safety Analysis″ Safety and Control Area covers the maintenance of the safety analysis which supports the overall safety case for the facility. The safety analysis is a systematic evaluation of the potential hazards associated with the conduct of an activity or facility, and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. The safety analyses utilize a combination of What-if Analysis, Hazards and Operability and Quantitative Risk Analysis and documents a systematic evaluation of hazards associated with the licensed facilities.

Modifications to the facility are made in accordance with the business-wide Change Control program, which requires review of EHS parameters for new or modified facilities, processes, and new or relocated machinery, apparatus and equipment. Under this process, a proposed modification is screened for potential impact on the facility safety analysis. Where screening identifies a potential impact, a more detailed review of the proposed modification is conducted to identify if the change impacts a safety system, or the basis of the safety assessment (e.g., materials, quantities, locations, etc.). Third-party reviews or regulatory approvals are conducted as required. In this way, impacts on the safety analysis are identified and the safety analysis is validated and updated, where necessary.

The safety analysis report was not revised in the reporting period. The safety analysis report concludes that the engineered and administrative controls provide protection over a broad range of operating conditions that both restricts the likelihood of events and adequately protects the public and environment.

A routine five-year update to the safety analysis report is currently underway and will be completed in 2024. This update will incorporate the presence of the nearby high-rise construction.

3.5 Physical Design

The "Physical Design″ Safety and Control Area relates to activities that impact on the ability of systems, structures and components (SSC) to meet and maintain their design basis, given new information arising over time and taking into account changes in the external environment.

Changes made to the physical facilities, equipment, processes, procedures or practices that could adversely affect product quality, employee health and safety, the environment or the public as a result of the operation of the facility are assessed through the Change Control program. Any changes to the design basis are identified and assessed by key stakeholders through this program, including third-party reviews as required. Adequate mitigations are applied including modification of the proposed change, up to rejection of the proposed change.

During the reporting period, there were no modifications to the physical plant that altered the design basis and no significant facility changes.

3.6 Fitness for Service

The "Fitness for Service" Safety and Control Area covers activities that impact on the physical condition of SSCs to ensure that they remain effective over time. This includes programs that ensure all equipment is available to perform its intended function when called upon to do so.

A Critical to Safety (CTS) program is in place. CTS items are those hardware items that directly ensure the safety of workers, protection of the environment, or regulatory compliance in the following three categories:

- Equipment and infrastructure identified as Safeguard Measures in the Facility Safety Analysis report;
- Respiratory personal protective equipment; and
- Instrumentation generating data to demonstrate Regulatory Compliance.

BWXT NEC documentation describes the CTS program for the production of nuclear fuel. Equipment identified on the CTS list is governed by a number of assurance procedures.

The CTS program elements include the following:

- Process to identify CTS equipment;
- CTS inventory list revision control;
- Procurement controls governing ordering and incoming verification to confirm CTS equipment received matches the CTS equipment list requirements;
- Requirements in the established change management program to adequately capture new additions and ensure sufficient detailed review of changes to existing CTS equipment; and
- The factors determining the preventive maintenance schedule of CTS Equipment.

The facility is using an asset management and preventive maintenance software system. Maintenance Connection® is a web-based maintenance management software for work order and asset management. Maintenance Connection assists BWXT NEC in efficiently managing preventive maintenance tasks as well as to control and identify maintenance on CTS and Critical-to-Quality assets and components. Preventive maintenance tasks on CTS equipment are designated in this system as described in the business wide Enterprise Asset Management Program Procedure.

Certain CTS tasks have associated immediate independent post-maintenance verification or testing. For example, independent verification is in place on the ventilation systems during filter changes as well as following rotoclone ductwork maintenance.

In the reporting period, 99% of CTS tasks issued were completed within 14 days of the target completion date. All CTS tasks issued in the reporting period are closed.

Preventive maintenance is considered during the assessment of changes as part of the business-wide Change Control program. Additionally, in the event of a near miss, incident, injury, inspection or suggestion, the preventive maintenance program for related equipment is reviewed as applicable. As a result, during the reporting period, the following improvements to preventive maintenance tasks were implemented:

- Bipel monthly procedure was updated to include task to replace the granulator screen to minimize the chances of re-slugging powder when screen breaks.
- A visual inspection checking compressor lines to the sprinkler room was implemented to verify the line is free of physical damage.
- Furnace re-build procedure was updated to include checking for leaks or signs of leaks under furnace.
- Vibration analysis added to preventative maintenance program on exhaust systems.
- Annual capacitor bank inspection has been added to visually check for any swelling and measure capacitance.

Managing aging means ensuring the availability of required safety functions throughout the service life of the plant, with account taken for changes that occur with time and use. Aging management applies to SSCs that can, directly or indirectly, have an adverse effect on the safe operation of the plant. The asset management program accounts for aging through the CTS program inspection, testing and maintenance tasks. These processes provide warning signs and initiate corrective and preventive maintenance activities. Items identified for replacement are assessed through the Change Control program.

The preventive maintenance program is periodically assessed through self-assessments and internal audits, discussed in section 3.2 of this report. Key performance indicators are in place and are routinely reviewed. The program is adequate and effective and is continually improved.

3.7 Radiation Protection

The "Radiation Protection" Safety and Control Area covers the implementation of the radiation protection program, in accordance with the Radiation Protection Regulations. BWXT NEC has a well-established and effectively implemented radiation protection program, which includes a commitment to ALARA and continuous improvement. The program addresses the radiation hazards associated with UO_2. This program ensures that surface/airborne contamination and radiation doses to employees and the public are monitored and controlled. The Director, EHS & Regulatory, has oversight of BWXT NEC's radiation protection program.

Internal radiation hazards exist in the form of loose uranium which may enter the body by inhalation, ingestion or absorption. As a result, air monitoring is conducted at various work stations. Workstation air monitoring is a key performance indicator that speaks to effective administrative and engineered controls. A respiratory protection program is in place in accordance with Canadian Standards Associate (CSA) Z94.4-18, *Selection, use, and care of respirators.* Additionally, surface contamination measurements (swipes) are conducted in manufacturing areas of each facility to monitor and reduce the amount of loose radioactive material available for potential internal exposure of employees. As these monitoring processes produce large quantities of data, trending of data is performed at least annually and reviewed by site committees.

Additionally, urine samples are regularly provided by employees to indicate if inhalation may have occurred. Sampling frequency ranges from weekly to monthly, based on established criteria such as job function and worker location within the facility. Criteria which determine the frequency of urine sampling for an employee are documented in the radiation protection program.

A second radiological hazard exists in the form of low-level external gamma and beta radiation doses to employees. Routine gamma surveys are conducted, and Nuclear Energy Workers (NEWs) are issued thermoluminescent dosimeters (TLDs) to measure whole body, skin, eye, and extremity dose to ensure compliance with the regulatory radiation dose limits and the ALARA principle. Dose results are reviewed

by EHS staff on receipt from the licensed dosimetry service provider. In addition, the ALARA Committee reviews trending data from radiation monitoring results through routinely scheduled meetings and provides recommendations to improve ALARA implementation.

As external radiation hazards from the storage and use of radioactive materials may result in radiation doses to workers, routine gamma radiation surveys are conducted using real-time portable handheld radiation detectors. Measured dose rates are compared to established dose rate targets for a given area based on area classification and occupancy. When necessary, items are moved to alternative storage locations and/or shielded. Areas that appear routinely higher than target dose rates are investigated for permanent improvements, such as shielding or reconfiguration.

A component of the radiation protection program is area classification. Areas are classified into four different categories for the purpose of controlling the spread of radioactive contamination, and ensuring appropriate engineered and administrative controls are in place. These classifications are defined in the *Radiation Protection Manual* as follows:

- Unclassified Area - these areas do not involve nuclear substances and are considered public domain. Incidental contamination does not exceed the unclassified area Internal Control Levels.
- Active Area - these areas are designed for handling materials with loose contamination that is potentially above unclassified area Internal Control Levels. External radiation hazards are not of significant concern.
- R2 Area - these areas are designed for operations involving exposed non-dispersible nuclear substances, where external radiation is of concern and loose contamination may be above R1 Internal Control Levels.
- R3 Areas - these areas are designed for operations involving exposed solid dispersible nuclear substances, where external radiation may be of concern and where the hazard of contaminant inhalation or ingestion is identified. Loose contamination may be above R2 Internal Control Levels and below R3 Internal Control Levels. Where the inhalation hazard is high, respiratory protection is required for all area entries.

BWXT NEC has established CNSC accepted Action Levels for various radiological and environmental parameters. An Action Level is defined in the *Radiation Protection Regulations* as “a specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee’s radiation protection program, and triggers a requirement for specific action to be taken.”

Action Levels are established in accordance with the CNSC regulatory document G-228, *Developing and Using Action Levels*, which are approved by the CNSC and specified in the licence conditions handbook (refer to Table 5). Although Action Levels are set below regulatory limits, exceeding an Action Level is considered a CNSC reportable event in which BWXT NEC must notify the Commission within 24 hours of becoming aware that an Action Level has been exceeded. Accordingly, BWXT NEC has established Internal Control Levels for various radiological and environmental parameters that are set even lower than Action Levels to act as an early warning system. An Internal Control Level exceedance results in internal investigation and corrective and preventive action. During the reporting period, all measurements were below Action Levels and regulatory limits.

Nuclear Energy Worker	Period	Action Level (mSv)
Effective dose	Quarter of a year	6.0
Effective dose	1 year	15.0
Effective dose	5 years	60.0
Skin dose	1 year	350
Extremity dose	1 year	350
Pregnant NEW	Balance of the pregnancy	3.5
Parameter		**Action Level**
Urinalysis		10 µg/L for any period

Nuclear Substance and Form	Action Level		
U in Airborne Contamination	Unclassified Area	R2 Area	R3 Area (non-mask)
	36 dpm/m^3	180 dpm/m^3	270 dpm/m^3

Table 5: Summary of Action Levels for the Radiation Protection Program

BWXT NEC has a well-established integrated management system for environmental, health and safety program excellence. The radiation protection program is effectively implemented. BWXT NEC has an established *EHS Mission Statement* that is reviewed and signed annually by the President of BWXT NEC. The *EHS Mission Statement* includes a commitment to ALARA and continuous improvement. Elements of the radiation protection program such as dose monitoring, contamination monitoring, and radiation field surveys, etc. are conducted by qualified workers and reviewed internally by EHS staff and Committees on a regular basis. Details of the reviews are recorded in meeting minutes.

An internal audit and self-assessment of the radiation protection program, with a focus on elements of radiation protection program effectiveness and compliance, are conducted routinely. Non-conformances are addressed and tracked to completion in accordance with program requirements.

In accordance with the *Radiation Protection Regulations* and CNSC Guidance Document G-129, *Keeping Radiation Exposures and Doses As Low As Reasonably Achievable*, BWXT NEC has implemented a radiation protection program. This document establishes the radiation protection program in place and identifies corresponding procedures to ensure that radiation exposures and doses are kept ALARA.

Key components of the radiation protection program include:

- Compliance with all relevant regulatory requirements;
- The setting of ALARA goals and objectives;
- Hazard recognition, risk assessment and change control processes;
- A comprehensive worker training program; and
- Documented safety concerns, near misses and incidents with appropriate root-cause analysis, preventive and corrective actions.

The radiation protection program includes all worker radiation safety elements that demonstrate compliance to relevant regulations, codes, and standards:

- EHS policy commitment to ALARA
- Area classifications and requirements
- Material handling
- Non-routine or high-risk work controls
- Internal and external radiation hazard assessments
- Internal and external radiation monitoring and recording

Continuous improvement is achieved through several review processes, including site inspections, reported safety concerns, near miss and incident investigations, self-assessments, internal and external audits. There were no major changes to the radiation protection program during the reporting period. Minor continuous improvements were instituted as follows:

- The Breathing Air Monitoring work instruction was revised to reflect current practices with administrative edits throughout.
- The Radioactive Waste Management work instruction was revised to include a waste hierarchy, clarify duties/responsibilities, and the addition of steps for waste management process.
- The Internal Dose Assignment work instruction was revised to clarify time entry allocation.

The radiation protection program is well-established and effective. Radiation dose trends demonstrate the company's commitment to ALARA. Program goals are monitored through the site's ALARA Committees as summarized in section 3.7.1.

3.7.1 ALARA Committee Performance

The ALARA committee works to review and continuously improve elements of the radiation safety program, and implement ALARA practices where practical in order to ensure that radiation dose levels are as low as reasonably achievable. Committee members consist of both unionized and management employees. The ALARA committee targets quarterly meetings at a minimum. The committee met five times during the reporting period. The ALARA committee participated in a joint committee meeting with the WSC and Ergonomics Committee. Dose results, radiation protection related events, audits, and employee concerns were reviewed and discussed. Actions are assigned and tracked as part of the meeting minutes. Committee activities are communicated to all workers via email distribution or employee notice board postings.

ALARA Committee goals and results for the reporting period are provided in Table 6. Goals that are not achieved are informally reviewed by the ALARA Committee to discuss probable causes. The feasibility of achievement is discussed, and implementation plans revised as needed. These are considered during future goal setting. As radiation doses continue to be well below the regulatory dose limits, dose reductions become increasingly challenging.

ALARA Committee Goals	Actual	Result
Conduct extremity dose assessment.	Completed	Achieved
Complete one shielding project by year-end.	Completed	Achieved
Complete one local ventilation project by year-end.	Completed	Achieved

Table 6: ALARA Committee Goals and Results

2024 goals for the ALARA Committee are established as follows:

1. Review ventilation survey program.
2. Review machine or process for ALARA improvements.
3. > 99% compliance in TLD audits.

3.7.2 Radiation Protection Training Program and Effectiveness

Radiation protection training programs are compliant with the systematic approach to training methodology. An internal or external specialist in radiation protection periodically provides classroom training to new and continuing NEWs or those working in areas with radioactive materials. Testing is performed on completion of the training to demonstrate employee understanding. Course content includes general shop floor rules, radiation fundamentals, sources of ionizing radiation, health effects, emergency response and other safety-related content. Training completion is monitored using a learning management software system, which tracks and triggers retraining as required. Course completion details are provided in section 3.3. Training effectiveness is monitored through radiation dose results, internal inspections, self-assessments, and audits as well as incident investigations.

3.7.3 Radiation Device and Instrumentation Performance

Radiation detection instrument error can occur due to a variety of factors: drift, environment, electrical supply, addition of components to the output loop, process changes, etc. The facility maintains a system for managing radiation detection instrument calibrations. Calibration is conducted to ensure accurate indication during field use. Calibrations are performed under environmentally controlled conditions suitable for the inspections, measurements, and tests being performed, as determined by the equipment manufacturer. Calibration intervals are established, so that calibration occurs before any anticipated significant changes occur in measurement capability. Radiation detection equipment calibrations are conducted within 12 months of the previous calibration as required by regulation.

All active radiation devices and instruments were maintained in a state of safe operation. Where calibration is expired or where detectors fail calibration, they are removed from service until they are repaired and meet radiation calibration expectations.

There were no changes to the calibration program during the reporting period.

3.7.4 Contamination Control Data

When radioactive material is handled in a non-sealed container, there is the potential for it to be spread onto other objects. This is known as radioactive contamination. Radioactive contamination refers to nuclear substances on surfaces or within the air, where its presence is unintended or undesirable.

Surface contamination measurements (swipes) are conducted in manufacturing areas. Contamination by itself is not necessarily an indicator of exposure potential but can be used as an indicator of housekeeping conditions; however significant amounts of loose surface contamination have the potential to become airborne. If this occurs, the air monitoring results will reflect the increased airborne concentration and appropriate corrective action is then taken. There were no significant personnel contamination events during the reporting period.

Routine surface contamination measurement results are summarized in Table 7. The number of surface contamination samples exceeding the Internal Control Levels have remained low. Surface contamination results are reviewed by EHS staff and discussed at WSC Meetings. Overall, 99% of swipes were within Internal Control Levels, indicative of effective contamination control measures and cleaning schedules.

Surface Contamination					
Classification and Area Description	Internal Control Level	2022		2023	
		Total Number of Samples	Total Number Samples Exceeding Internal Control Level (%)	Total Number of Samples	Total Number Samples Exceeding Internal Control Level (%)
R3-Powder Preparation, Pressing, Grinding, Laboratory	22,000 dpm/100 cm^2	464	2 (0.4%)	465	1 (0.2%)
R2-Sintering, Sorting & Stacking, Laboratory	2,200 dpm/100 cm^2	515	6 (1%)	523	11 (2.1%)
Active - Plant Washrooms, Laundry Room	2,200 dpm/100 cm^2	120	4 (3%)	121	1 (0.8%)
Unclassified	220 dpm/100 cm^2	543	15 (3%)	535	7 (1.3%)

Table 7: Surface Contamination Summary Results

3.7.5 Air Monitoring

As part of well-established and implemented industrial hygiene programs, breathing air is sampled for measurement of uranium content. Workstation air monitoring is a key performance indicator that speaks to effective administrative and engineered controls. A respiratory protection program is in place. Non-routine work functions, such as machine maintenance, modifications, etc. are controlled by Radiation Safety Instructions. These processes specify protective measures, including those to reduce exposure to airborne UO_2. This may or may not include air monitoring and/or respirator use.

Each process workstation is monitored continuously during routine operating conditions for airborne UO_2 and samples are counted in-house. Internal dose to workers is estimated and assigned based on these air monitoring results. Workstation air sampling results are summarized in Table 8.

Workstation Air Monitoring	2019	2020	2021	2022	2023
Number of Workstations Sampled	21	21	21	21	21
Total Number of Samples Collected	5292	5292	5250	5271	5271
Total Number of Samples Exceeding Internal Control Level (area specific)	8	6	4	2	5
Total Number of Samples Exceeding Action Level (area specific)	0	0	0	0	0
Average Concentration (dpm/m^3)	8.8	6.7	7.6	7.6	9.2
Maximum Value Recorded (dpm/m^3)	433	368	248	306	371

Table 8: Workstation Air Monitoring Summary

In the reporting period, five workstation air samples exceeded an Internal Control Level. The results were identified during the daily air sample result reviews. Three were associated with Grinder #2, one was associated with Grinder #3, and one was associated with Final Press Feed #1.

The elevated results for Grinder #2 were related to a blockage in one of the ventilation ductworks for a grinding wheel. Employees were asked to wear a respirator while operating the machine until the blockage was cleared. No intakes or exposures were observed for employees involved with the process.

The elevated result for Grinder #3 was related to cleaning of ductwork in the grinding room. The cleaning of the ductwork was performed under a radiation safety instruction where all employees involved in the work wore respirators. When cleaning up after the work an operator used an incorrect vacuum with no filter which caused dust to become airborne. No intakes or exposures were observed.

The elevated result for Final Press Feed #1 was related to powder flow issues in the press. The room is classified as R3 mask area and operators are required to wear a respirator. When operators were troubleshooting an issue with the powder flow, this resulted in some of the powder breaching containment of the cone, which subsequently contaminated the cart and floor adjacent to the air sampler. The contamination was cleaned up safely and effectively and no intakes or exposures were observed.

3.7.6 Facility Radiological Conditions

Radiation fields from use and storage of radioactive materials may result in external radiation doses to workers. To ensure that radiation dose rates are ALARA, routine gamma radiation surveys are conducted periodically using calibrated portable handheld radiation detectors. Measured dose rates are compared to targets for areas based on area classification and occupancy. When necessary, items are moved to alternative storage locations and/or temporarily shielded. Areas that appear routinely higher than target dose rates may be investigated for improvements, such as permanent shielding or reconfiguration. Routine dose rate measurements are summarized Table 9. Dose rates remain low in radioactive material handling, storage areas and adjacent occupied locations. An increase in the average dose rate in storage areas is attributed to a reclassification of one production area to a storage area. Variability due to the timing of the surveys is a factor in the results, as production levels and movement of materials vary over the course of a year.

Dose Rates	2019	2020	2021	2022	2023
Total Number of Locations Surveyed	160	159	160	160	160
Average Dose Rate (µSv/h) on Shop Floor	2.4	3.9	2.8	3.1	3.9
Average Dose Rate (µSv/h) in Storage Areas	5.3	5.6	5.2	6.4	12.5

Table 9: Routine Dose Rate Survey Summary

3.7.7 Urinalysis Results

The presence of uranium in the urine is an indication of recent inhalation of UO_2 dust or the systemic clearance of an established thorax burden. At BWXT NEC, urinalysis is used as a screening tool to initiate further review of internal dose control measures and practices but is not used to estimate internal dose. Internal dose is estimated based on workstation air monitoring (refer to section 3.7.9).

All employees working where exposed UO_2 material is processed submit urine samples for uranyl ion analysis weekly or monthly, depending on the work area. Samples are analyzed by an external laboratory for uranium content using Inductively Coupled Plasma - Mass Spectrometry with a minimum detectable concentration of 0.1 µg U/L. Results are compared to Internal Control Levels and Action Levels and entered and retained in an electronic database. Urinalysis results are summarized in Table 10.

During the reporting period, there was one sample result above the Internal Control Level of 5 µg U/L. The affected employee's result returned to nominal the following week. There were also no elevated workstation air concentration results during the week. No issues were found with the employee's respirator fit test. Inhalation was unlikely to be the route of exposure and there was no conclusive reason for the elevated result.

There were no Action Level exceedances. This demonstrates that current engineered and administrative controls, where applicable, are adequately controlling the inhalation hazard.

Urinalysis	2019	2020	2021	2022	2023
Number of urine samples analyzed	1594	1646	1499	1332	1320
Number of samples above Internal Control Level (5 µg U/L)	0	0	0	0	1
Number of samples above Action Level (10 µg U/L)	0	0	0	0	0
Maximum result (µg U/L)	3.8	4.0	2.7	2.7	5.1

Table 10: Urinalysis Results Summary

3.7.8 Radiation Doses

Radiation dose refers to the energy deposited or absorbed in materials through which it passes. Equivalent dose is used to assess how much biological damage is expected from the absorbed dose. It takes the properties of different types of radiation into account. Effective dose is used to assess the potential for long-term effects that might occur in the future. It is a calculated value, measured in milliSievert (mSv), which takes into account the absorbed dose to all organs of the body, the relative harm level of the type of radiation, and the sensitivities of each organ to radiation. All radiation exposures received by employees in the reporting period were within Internal Control Levels, Action Levels, and regulatory limits. Action Levels

are site specific and are accepted by the CNSC through the facility operating licence conditions handbook. Regulatory limits are specified in the *Radiation Protection Regulations.* Regulatory limits are listed in Table 11 and Table 12. All measured radiation doses received by individuals in the reporting period were within Internal Control Levels, Action Levels, and regulatory limits.

Effective Dose Limits		
Person	**Period**	**Effective Dose (mSv)**
NEW, including a pregnant NEW who has yet to disclose pregnancy status	(a) One-year dosimetry period (b) Five-year dosimetry period	50 100
Pregnant NEW	Balance of the pregnancy	4
A person who is not a NEW (i.e., a member of the public)	One calendar year	1

Table 11: Regulatory Effective Dose Limits

Equivalent Dose Limits			
Organ or Tissue	**Person**	**Period**	**Equivalent Dose (mSv)**
Lens of an eye	(a) NEW (b) Any other person	One-year dosimetry period One calendar year	50 15
Skin	(a) NEW (b) Any other person	One-year dosimetry period One calendar year	500 50
Hands and feet	(a) NEW (b) Any other person	One-year dosimetry period One calendar year	500 50

Table 12: Regulatory Equivalent Dose Limits

All workers are classified as either NEWs or non-NEWs. All NEWs are deemed to have a reasonable probability of receiving a dose of radiation that is greater than the prescribed limit for a member of the public (1 mSv/year) in the course of the person's work with nuclear substances or at a nuclear facility. All NEWs are assigned personal passive dosimeters known as TLDs (thermoluminescent dosimeter). These passive dosimeters measure the whole body and skin doses received in each monitoring period. TLD rings are worn on certain employee's hands for a one-week period each quarter. The test results and the weekly hours of contact are used to estimate the extremity dose for that quarter. TLDs are exchanged monthly and analyzed by a CNSC licensed external dosimetry service provider. The dosimetry service provider reports the measured doses to BWXT NEC and to the Health Canada National Dose Registry. On receipt, knowledgeable staff reviews the monitoring results, and compares them to associated Internal Control Levels, Action Levels and regulatory limits.

The annual dose assignment for employees at BWXT NEC consists of external and internal dosimetry inputs, for which dose summaries are tracked quarterly, year-to-date, five-year and lifetime. All NEWs who are monitored for radiation exposure receive an annual dose letter identifying their annual dose.

Dosimetry results are summarized in the following sub-sections. Employees are divided into workgroups based on job function for dosimetry analysis and trending. Operators are employees who directly manufacture product. Staff includes management and professional employees who support the operation with the licensed activities.

3.7.9 Total Effective Dose Equivalent (TEDE)

TEDE includes TLD monitored external and calculated internal dose based on workstation air monitoring. Table 13 provides a summary of TEDE dosimetry measurements with monitored workers grouped in various ranges of exposure. Approximately 40% of TEDE are less than 1 mSv. TEDE measurement results by work group are summarized in Table 14. Note that average dose results include zero measurements. The total collective dose for 2023 was 65.57 mSv. The maximum individual five-year dose listed in Table 15 is well below the 100 mSv regulatory limit and the 60 mSv Action Level.

The average annual TEDE trend for all monitored individuals is shown in Figure 3. Average TEDE is trending steady overall. Average and maximum staff doses remain very low. Job rotation, decrease in Sort and Stack activities, and administrative controls are credited with the downward trend in maximum dose over the last several years. Additionally, improvements in ALARA awareness and operator experience are contributors.

Calendar Year	Total # Individuals	Total # of Individuals in Dose Range (mSv)							
		0 - 1	1 - 5	5 - 10	10 - 20	20 - 50	50 - 100	100 - 200	200 - 500
2023	40	16	23	1	0	0	0	0	0
2022	42	19	22	1	0	0	0	0	0
2021	53	27	24	2	0	0	0	0	0
2020	58	28	24	6	0	0	0	0	0

Table 13: Total Effective Dose Equivalent Distribution

	Year	All Workgroups (TEDE)	Operators External Dose Only	Operators Internal Dose Only	Staff (TEDE)
Maximum (mSv)	2023	5.13	3.87	1.82	0.28
	2022	5.17	4.01	1.38	0.22
	2021	5.72	5.21	1.43	0.56
	2020	7.39	6.31	1.64	0.21
	2019	7.17	6.10	1.55	0.72
Average (mSv/person)	2023	1.64	1.32	0.92	0.05
	2022	1.39	1.29	0.58	0.06
	2021	1.62	1.46	0.65	0.07
	2020	1.82	1.74	0.78	0.01
	2019	1.63	1.42	0.76	0.07

Table 14: TEDE, External and Internal Dose Summary

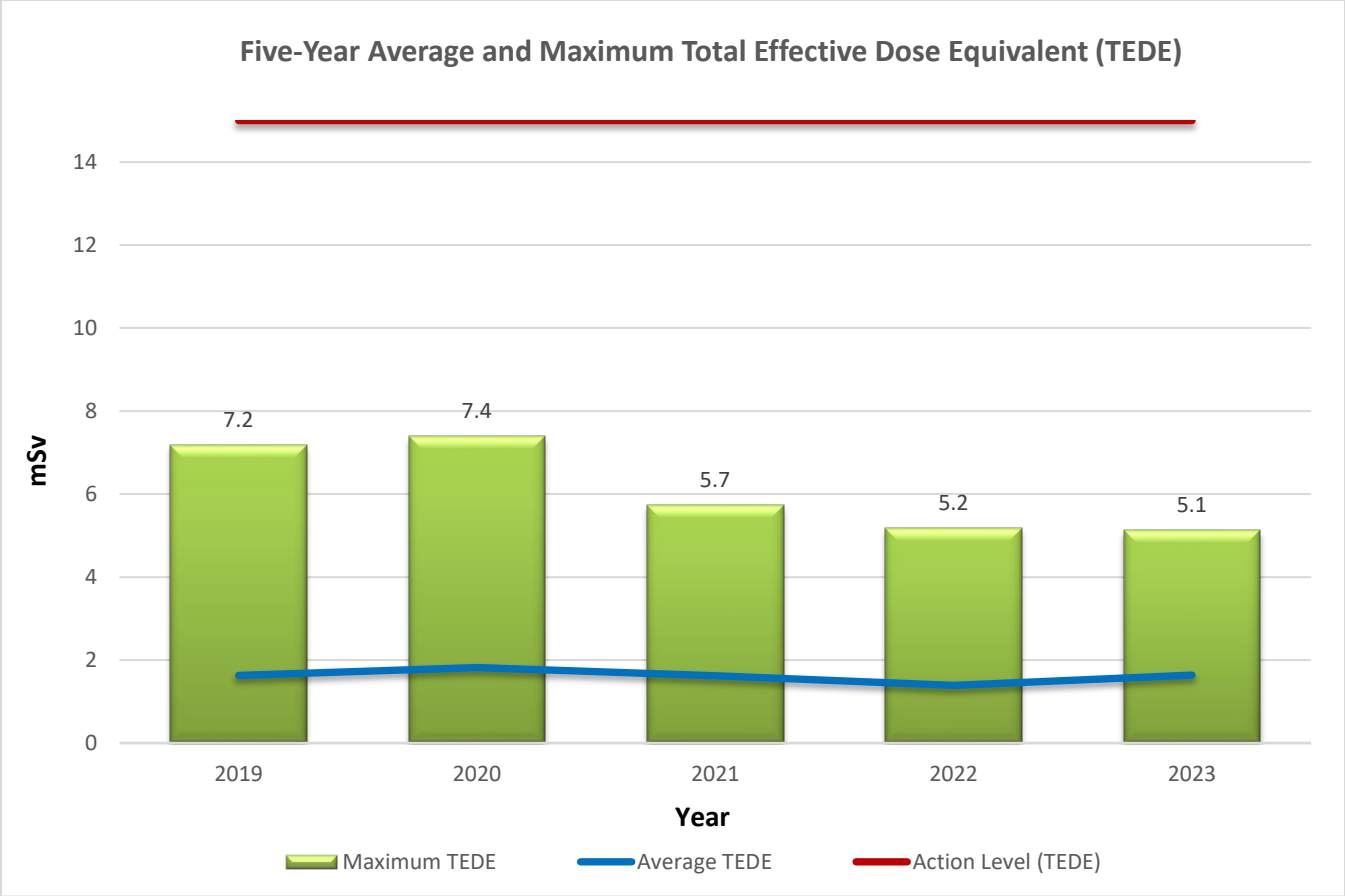

Figure 3: Five-Year Annual Total Effective Dose Equivalent

	Year Rage	All Workgroups
Maximum Individual (mSv)	2021 – 2025	14.8
	2016 – 2020	36.6
	2011 – 2015	39.1
	2006 – 2010	41.1

Table 15: Maximum Individual Five-Year Dose

*Note: Table updated from previous years rolling to reflect fixed five-year dosimetry period maximum doses.

3.7.10 Equivalent Skin Dose

TLDs measure the skin doses received in each monitoring period. Skin dose is the measure of the radiation dose that is absorbed by the skin from the deposition of energy from low penetrating radiation.

Table 16 provides a summary of equivalent skin dosimetry measurements with monitored workers grouped in various ranges of exposure. Approximately 30% of skin doses are less than 1 mSv. Skin dose by workgroup is listed in Table 17. The average annual skin dose trend for all monitored individuals is shown in Figure 4.

Skin doses across all workgroups remain a fraction of the applicable regulatory limit and Action Level. The overall trend is showing that average skin dose is decreasing. The maximum skin dose has decreased in the recent year due to job rotation, decrease in Sort and Stack activities, and administrative controls. While the primary objective of shielding improvements is reduction in gamma exposures, there is also a reduction in overall beta fields in the work area from the shielding.

Calendar Year	Total # Individuals	Total # of Individuals in Dose Range (mSv)							
		0 - 1	1 - 5	5 - 10	10 - 20	20 - 50	50 - 100	100 - 200	200 - 500
2023	40	12	7	10	7	4	0	0	0
2022	42	15	11	7	7	2	0	0	0
2021	53	22	8	7	7	9	0	0	0
2020	58	24	10	5	7	12	0	0	0

Table 16: Equivalent Skin Radiation Dose Equivalent Distribution

	Year	All Workgroups	Operators	Staff
Maximum (mSv)	2023	27.54	27.54	1.05
	2022	28.69	28.69	1.29
	2021	37.19	37.19	1.89
	2020	39.10	39.10	0.87
	2019	39.76	39.76	3.54
Average (mSv/person)	2023	7.34	10.05	0.19
	2022	5.83	7.82	0.23
	2021	7.86	10.08	0.21
	2020	8.88	12.24	0.07
	2019	8.07	10.85	0.27

Table 17: Equivalent Skin Dose Summary

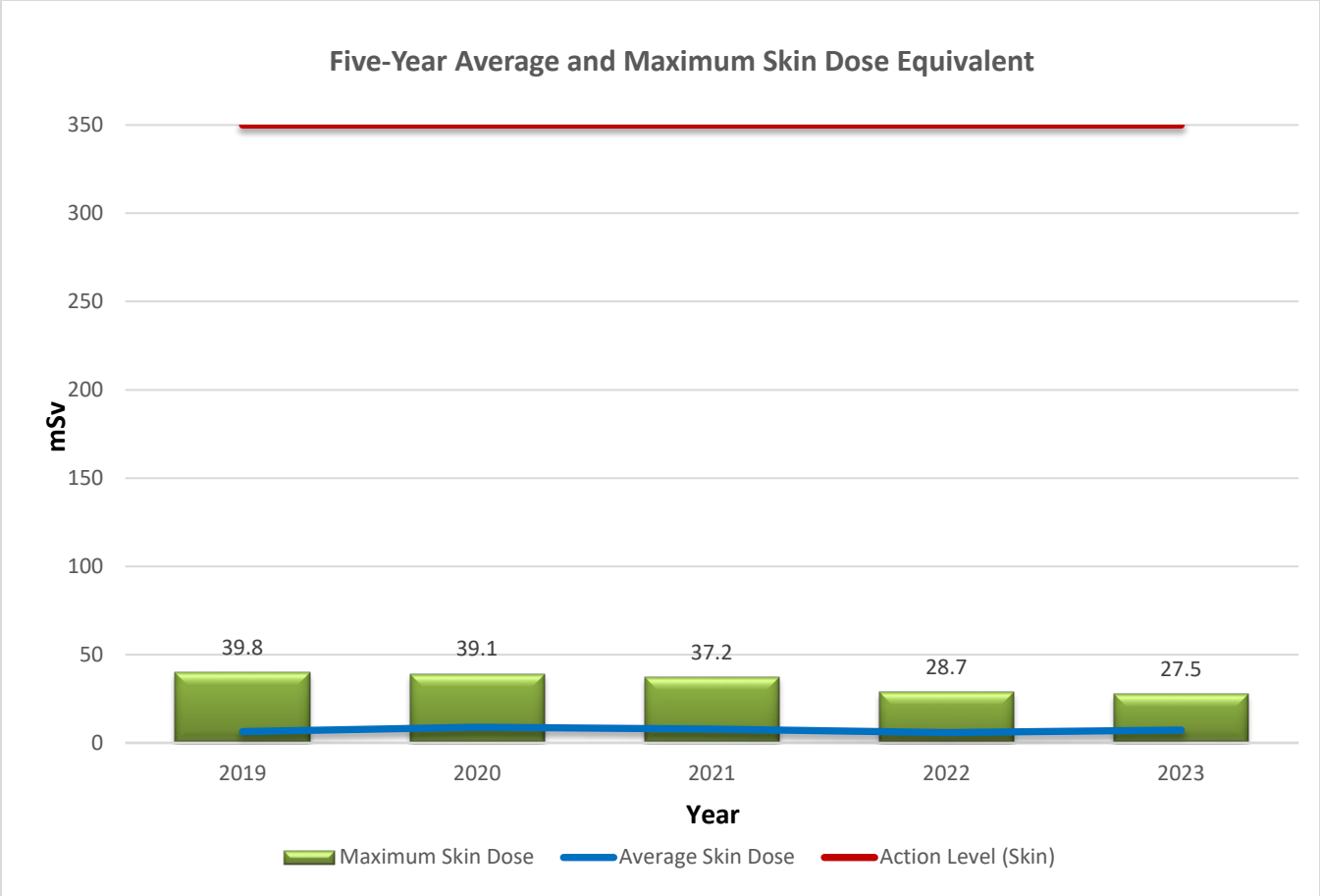

Figure 4: Five-Year Skin Dose Equivalent

3.7.11 Equivalent Extremity Dose

TLD rings are worn on certain individual's hands for a one-week period each quarter to measure extremity dose. A scaling factor is calculated based on hours worked in the quarter and is provided to the dosimetry service provider each monitoring period. The dosimetry service provider applies the scaling factor to the measured dose to estimate the exposure for the quarter.

A non-conformance was issued to BWXT by the CNSC following a radiation protection inspection which stated *"BWXT-NEC-2023-01-NNC03: BWXT shall ensure that equivalent doses to the hands and feet are ascertained using licensed dosimetry, if there is a reasonable probability that workers receive a dose greater than 50 mSv in a 1-year dosimetry period"*. As a result, starting in second quarter 2023, BWXT Toronto issued ring dosimeters to all shop employees to be worn full time exchanging each month, rather than wear once per week per quarter and applying a factor based on hours worked. Preliminary results indicate the historical methodology used was conservative and resulted in an overestimation of doses compared to wearing rings full-time. In 2024, BWXT returned to the practice of estimating extremity dose using an unlicensed dosimetry methodology and wearing the rings weekly on a quarterly basis.

Table 18 provides a summary of equivalent extremity dosimetry measurements with monitored workers grouped in various ranges of exposure. Approximately 70% of extremity doses are less than 20 mSv. Equivalent extremity dose by work group is summarized in Table 19. Staff do not participate in the extremity monitoring program since there is minimal direct handling of product. The average annual

extremity dose trend for all monitored individuals is shown in Figure 5. Average extremity doses continue to remain low.

Calendar Year	Total # Individuals	Total # of Individuals in Dose Range (mSv)							
		0 - 1	1 - 5	5 - 10	10 - 20	20 - 50	50 - 100	100 - 200	200 - 500
2023	29	0	5	6	10	7	1	0	0
2022	31	1	5	5	7	10	3	0	0
2021	38	5	9	2	6	10	6	0	0
2020	42	2	8	8	7	8	7	2	0

Table 18: Extremity Dose Equivalent Distribution

	Year	All Workgroups	Operators	Staff
Maximum (mSv)	2023	53.43	53.43	N/A
	2022	68.59	68.59	N/A
	2021	66.06	66.06	N/A
	2020	115.52	115.52	N/A
	2019	79.67	79.67	N/A
Average (mSv/person)	2023	15.94	15.94	N/A
	2022	21.06	21.06	N/A
	2021	22.23	22.23	N/A
	2020	25.37	25.37	N/A
	2019	20.67	20.67	N/A

Table 19: Equivalent Extremity Dose Summary

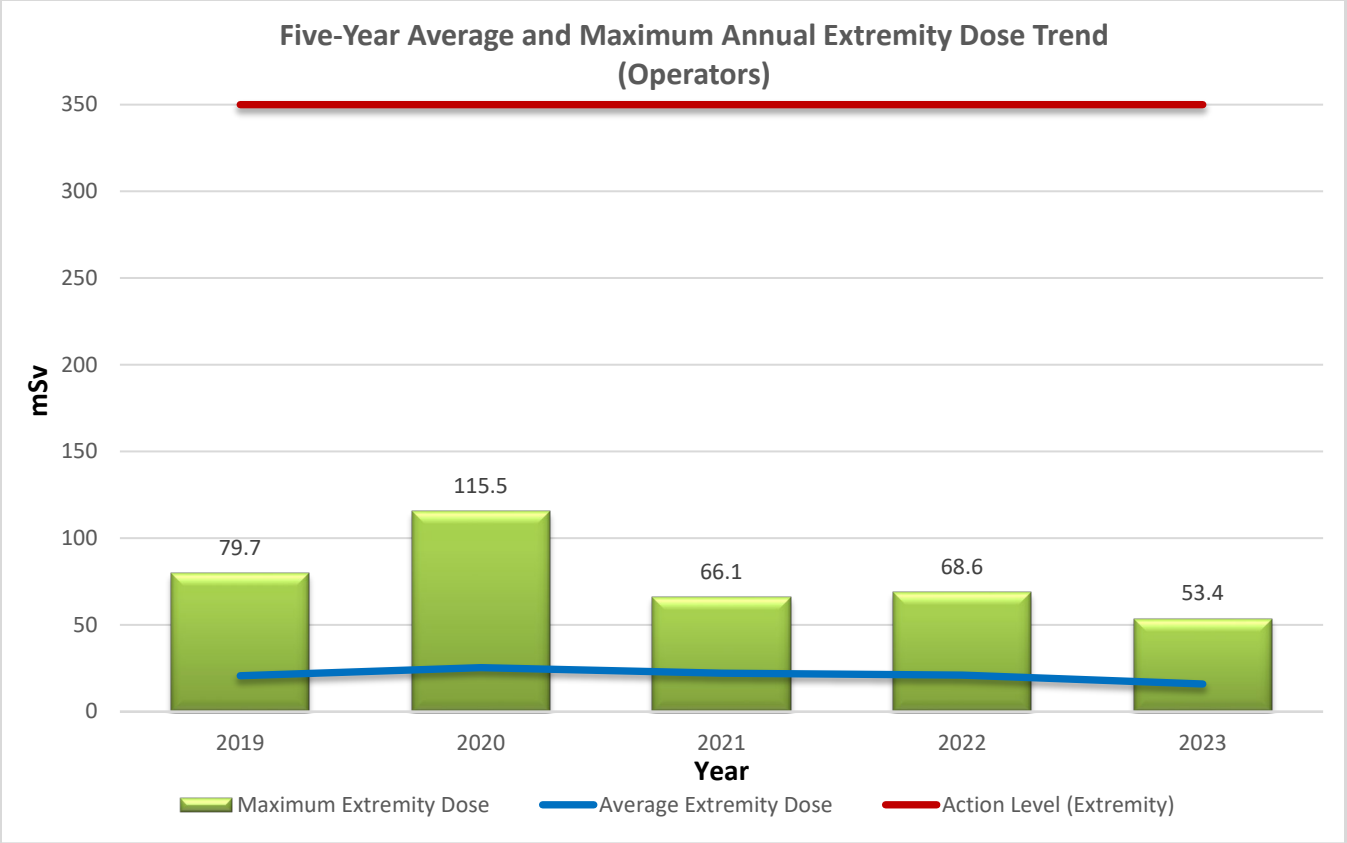

Figure 5: Five-Year Extremity Dose

3.7.12 Equivalent Lens of an Eye Dose

Equivalent eye lens dose is measured using the whole body TLD. The dosimetry provider calculates the eye dose Hp(3), using the results from the multiple elements within the TLD. All workers wear safety glasses, which helps to shield against the beta radiation that contributes to eye lens dose. The regulatory limit for a NEW is 50 mSv, shown in Table 12. Currently there is no Action Level in place at Toronto for eye lens dose. An internal control limit was set at 4.25 mSv/quarter. The maximum dose for the year was 3.87 mSv and the average dose amongst all workgroups was 0.97 mSv. A study to assess BWXT's methodology for ascertaining eye dose against REGDOC-2.7.2, *Dosimetry, Volume I: Ascertaining Occupational Dose* was completed in 2023. It concluded that the methodology of using the standard whole body TLD to calculate eye lens dose was effective for ascertaining eye dose. It is noted that placement of the TLD being lower on the torso and closer to the radiation field may contribute to an overestimation for eye lens dose. Overall, doses to the lens of the eye are well under the regulatory limit.

3.7.13 Total Estimated Doses to Members of the Public

Total effective radiation dose equivalent to members of the public are specified in the Radiation Protection Regulations and listed in Table 11. It is a calculated value, measured in mSv, which takes into account the absorbed dose to all organs of the body, the relative harm level of the radiation, and the sensitivities of each organ to radiation.

To ensure compliance with this regulation, BWXT NEC has established "Derived Release Limits" (DRLs) for uranium emissions to the environment. The facility DRLs account for the realistic exposure pathways

as described in the radiation protection program to restrict dose to a member of the public to 1 mSv (1,000 µSv) per year, which is the regulatory dose limit. The DRLs assume that a member of the public occupies the BWXT NEC boundary continuously (24 hours per day, 365 days per year). Note: Liquid effluent is not included in the calculation of public dose as the effluent is discharged directly to city sewer systems and is not used for drinking. Through direct correlation with the facility DRLs, the estimated effective dose contribution as a result of air releases is calculated.

In addition, the contribution from gamma radiation emission to the nearest member of the public is calculated from the net sum of the nearest environmental TLD results from all monitoring periods. The calculation assumes that a member of the public occupies the nearest residence for 66% of their time for the entire year (5,781 hours in a non-leap year).

Over the reporting period, radiation dose to members of the public surrounding BWXT NEC Toronto was a small fraction of the applicable regulatory dose limit as shown in Table 20 and Figure 6. As a result of Toronto operations, the total estimated radiation dose to a member of the public is 40.2 µSv (0.03 µSv from airborne emissions + 40.2 µSv from direct gamma radiation). In comparison to the 1 mSv (1,000 µSv) per year effective dose limit to a member of the public, doses from the operation are very low at 4%.

Year	Estimated Annual Public Dose (µSv)	% of Public Dose Limit (1,000 µSv = 1 mSv)
2023	40.2	4%
2022	17.3	2%
2021	17.3*	2%
2020	5.7	1%
2019	23.5	2%

Table 20: Estimated Radiation Doses to Members of the Public

* Value revised from original report.

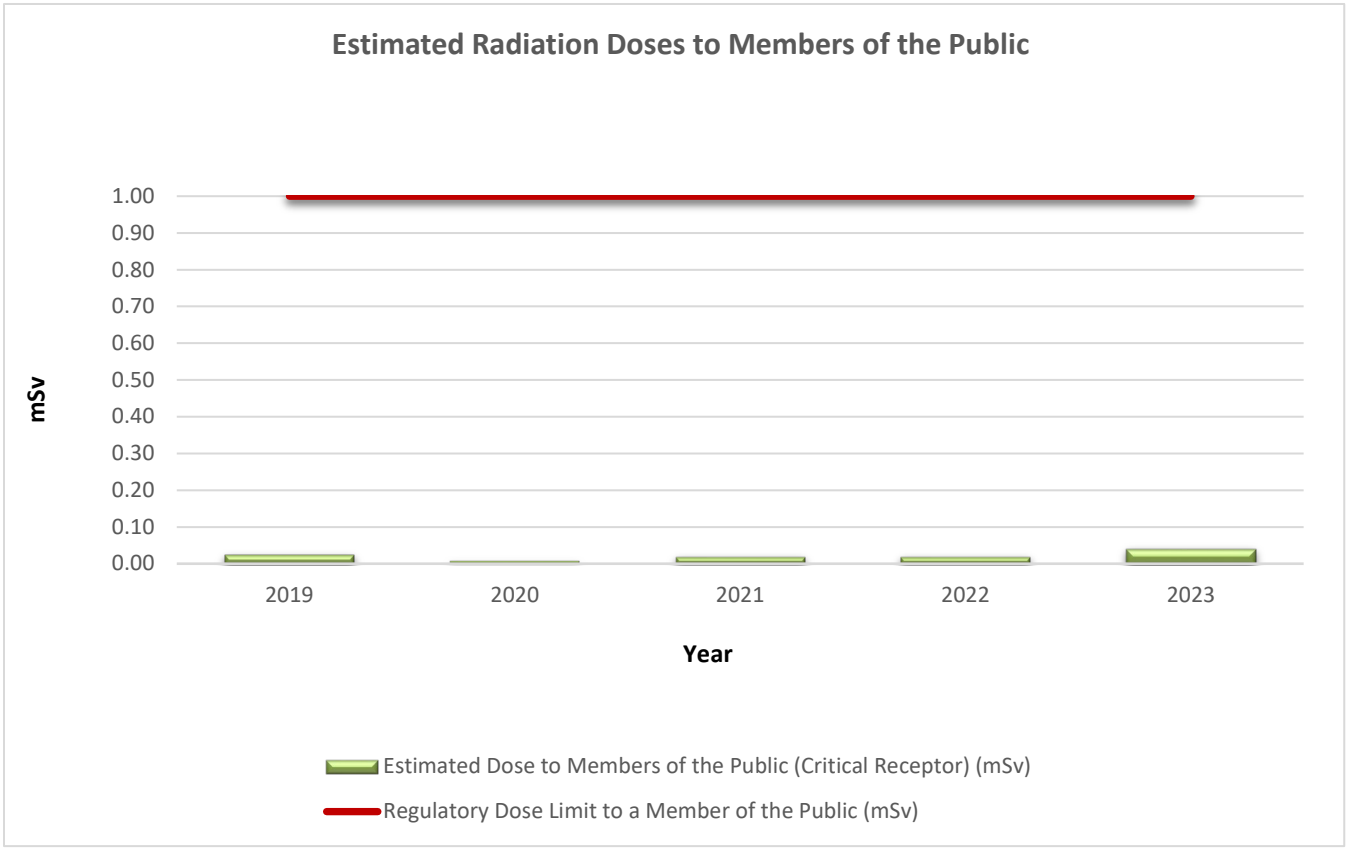

Figure 6: Estimated Radiation Doses to Members of the Public

3.8 Conventional Health and Safety

The "Conventional Health and Safety" Safety and Control Area covers the implementation of a program to manage non-radiological workplace safety hazards and to protect personnel and equipment.

BWXT NEC has a well-established integrated management system for environmental, health and safety program excellence. This is ensured through the effective implementation of program elements. BWXT NEC has an established *EHS Mission Statement* that is reviewed and signed annually by the President of BWXT NEC. BWXT NEC's objective is to eliminate or minimize as low as reasonably achievable both known and potential environmental, safety and health hazards which could impact our employees and the communities in which they live. EHS is a shared responsibility, top business priority and is continually improved.

Key components of the Health and Safety program include:

- Compliance with all safety and health-related regulatory requirements;
- The setting of EHS goals and objectives;
- Hazard recognition, risk assessment and change control processes;
- A comprehensive worker training program; and,
- Documented safety concerns, near misses and incidents with appropriate root-cause analysis, preventive and corrective actions.

The EHS program includes all worker safety elements that demonstrate compliance to relevant regulations, codes, and standards:

- EHS Policy
- Hazard Analysis and Regulatory Compliance
- Employee Involvement
- EHS Specialist
- Accident/Incident Investigation
- EHS Training
- Housekeeping
- Personal Protective Equipment
- Contractor Safety
- Emergency Preparedness/Response
- Risk Assessments
- High Risk Operations
- Industrial Hygiene
- Chemical Management
- Ergonomics
- Lock-Out Tag-Out

Continuous improvement is achieved through several review processes, including site inspections, reported safety concerns, near miss and incident investigations. The effectiveness of the overall program is reviewed throughout the year and evaluated in the annual management review (section 3.2.3).

3.8.1 Workplace Safety Committee

Eleven meetings were held with quorum. A total of 29 investigations and inspections were conducted in the reporting period. This includes WSC inspections, and near-miss, incident, and injury investigations. The WSC inspections led to 121 actions logged and tracked to closure. The top finding categories from WSC inspections were ‘housekeeping’, ‘fire protection’, ‘personal protective equipment’, and ‘chemical.’ Established goals for the reporting period are summarized in Table 21.

WSC Goals	Actual	Result
Radiation Safety Program Awareness Campaign	4/4	Achieved
Training – assess training needs for non-routine tasks	3/3	Achieved
Joint meeting with Peterborough WSC	Meeting held	Achieved

Table 21: Workplace Safety Committee Goals and Results

2024 goals for WSC are established as follows:

1. Participation in Safety Webinar.
2. OPEX – Incorporate review of relevant injuries from other sites into meeting discussion.
3. Personal Protective Equipment (PPE) Program Review.

3.8.2 Hazardous Occurrences

Under the Canada Occupational Health and Safety Regulations there are several different types of hazardous occurrences including:

- Minor Injury: any employment injury or an occupational disease for which medical treatment is provided and excludes a disabling injury.
- Disabling Injury: any employment injury or an occupational disease that results in either time loss, or modified duties. Disabling injuries can be either temporary, or permanent, depending on whether the employee is expected to make a full recovery.
- Loss of Consciousness: from an electric shock or a toxic or oxygen deficient atmosphere.
- Rescue / Revival or other Emergency Procedures: any incident that requires emergency procedures to be implemented, such as a hazardous substance spill, bomb threat or violence prevention procedure.

Annual reports are provided to the Minister Employment and Social Development Canada as required by regulation.

3.8.2.1 Injuries and Illness

As can be seen in Table 22, prior to 2022, BWXT NEC Toronto has had five consecutive years without a Lost Time Injury (LTI).

2017	2018	2019	2020	2021	2022	2023
0	0	0	0	0	14	0

Table 22: Lost Time Injuries

There were nine first aid cases and one recordable injury (modified work). The modified work injury resulted following a report of lower back discomfort, the cause was contributed to standing on the hard floor. Medical attention was sought, and modified work provided. Anti-fatigue matting and orthotics had been provided. Sixty percent out of the nine first aid injuries involved an injury to the back or shoulder. The injury/illness type associated with injuries varied including ‘ergonomic/musculoskeletal’’, ‘pain, ache, soreness, non-specific”, and ‘contusion/bruise’.

There were eight near miss events logged following defined event classification criteria. The top three noted categories were ‘radiation protection’, safety,’ and ‘industrial hygiene.’

3.9 Environmental Protection

The “Environmental Protection” Safety and Control Area covers programs that monitor and control all releases of nuclear and hazardous substances into the environment, as well as their effects on the environment as a result of licensed activities.

BWXT NEC has an effective environmental protection program in place which identifies and controls environmental aspects and drives continuous improvement to enhance performance and minimize risk to employees and the public. The facility has a well-established environmental management system to ensure effective monitoring programs are in place to achieve environmental goals and regulatory compliance. Environmental protection programs are compliant with:

- CSA N288.6-12, *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills*,
- CSA N288.5-11, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*, and
- CSA N288.4-10, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*.

3.9.1 Environmental Risk Assessment

In 2023 the Environmental Risk Assessment (ERA) was updated as part of the routine five-year update in accordance with CSA N288.6-22. The ERA concluded that emissions from the facility were very low and no adverse effects to human health are expected.

The emissions of non-radioactive contaminants from the facility were below the MECP point of impingement (POI) standards; and water releases are also assessed to be minimal. Hence, it was concluded that the emissions of non-radiological substances resulting from the facility pose no adverse effect to human health.

The ERA also concluded that emissions of radioactive and non-radioactive materials from the facility pose no adverse effects to non-human biota.

The ERA is available on BWXT NEC's public information website: nec.bwxt.com.

3.9.2 Environmental Management System

BWXT NEC has a well-established integrated management system for environmental, health and safety program excellence. This is ensured through the effective implementation of program elements. BWXT NEC has an established *EHS Mission Statement* that is reviewed and signed annually by the President of BWXT NEC. BWXT NEC's objective is to eliminate or minimize as low as reasonably achievable both known and potential environmental hazards which could impact our employees and the communities in which they live. EHS is a shared responsibility, top business priority and is continually improved.

An Environmental Management System is in place to identify and control environmental aspects and drive continuous improvement to enhance performance and minimize risk to the employees and the public.

Key components of the environmental protection program include:

- Compliance with all environmental-related regulatory requirements;
- The setting of environmental goals and objectives;
- Hazard recognition, risk assessment and change control processes;
- A comprehensive worker training program; and,
- Documented environmental concerns, near misses and incidents with appropriate root-cause analysis, preventive and corrective actions.

The EHS program includes all environmental protection elements that demonstrate compliance to relevant regulations, codes and standards:

- Air
- Water
- Waste
- Dangerous goods shipping
- Facility perimeter / boundary radiation monitoring
- Soil sampling

Continuous improvement is achieved through several review processes, including site inspections, reported concerns, near miss and incident investigations, self-assessments and audits. Environmental goals performance is discussed in section 3.9.4. Following these proactive reviews, the findings are documented, corrective actions identified and tracked to completion.

Internal inspections are completed on a routine basis and include all areas of the facility. The purpose of these inspections is to identify environmental as well as health and safety issues. WSC members carry out routine site inspections. After an inspection, the findings are documented, corrective actions identified, and submitted to responsible personnel to address. Depending on the complexity of the finding immediate action may be required (i.e., equipment shutdown), or the action may be incorporated into meeting minutes, or tracked in the ATS.

3.9.3 Effluent and Environmental Monitoring Programs

Small amounts of radiological and non-radiological substances are released to the environment as the result of operations at BWXT NEC. Environmental protection is regulated municipally for water effluent through sewer-use by-laws, provincially for air effluent and federally by the CNSC for both air and water. Airborne and waterborne radiological and non-radiological emissions to the environment are monitored as part of the effluent monitoring programs. BWXT NEC's effluent and environmental monitoring program is comprised of the following components:

1. Air effluent
2. High-volume ambient air
3. Water effluent
4. Soil sampling

BWXT NEC has established CNSC accepted Action Levels for various environmental parameters. An Action Level is defined in the *Radiation Protection Regulations* as "specific dose of radiation or other parameter that, if reached, may indicate a loss of control of part of a licensee's radiation protection program, and triggers a requirement for specific action to be taken." Action Levels are also applied to environmental protection. Action Levels are set below regulatory limits; however, they are CNSC reportable events. Accordingly, BWXT NEC has established Internal Control Levels for various environmental parameters that are set even lower than Action Levels to act as an early warning system. Internal Control Level exceedances trigger an internal investigation and corrective actions; however, they are not CNSC reportable events. No regulatory limits or Action Levels were exceeded during the reporting period.

3.9.3.1 Independent Environmental Monitoring Program

To complement existing and ongoing compliance activities and site monitoring programs, the CNSC implemented its Independent Environmental Monitoring Program to verify that the public and environment around CNSC-regulated facilities are not adversely affected by releases to the environment. This verification is achieved through independent sampling and analysis by the CNSC. This program applies to the BWXT NEC operations. The most recent results are available for sampling conducted in 2022. Results are compared to relevant provincial and federal guidelines and are available on the CNSC website.

3.9.4 Environmental Protection Program Performance

Environmental protection goals and results are summarized in Table 23.

Environmental Protection Program Goals	Actual	Result
Investigate filtration of waste oil drums.	Trial in progress	Achieved
Establish process and dismantle exhaust filters for disposal.	12 processed	Achieved
Waste Management Program improvements.	Program implemented	Achieved

Table 23: Environmental Protection Program Goals

2024 Environmental Protection goals are established as follows:

1. Light sensor installation in plant (2).
2. Dismantle 16 exhaust filters by year-end.
3. Divert 100 kg of radioactive waste by year-end.

3.9.5 Air Effluent Monitoring

BWXT NEC has a valid *Environmental Compliance Approval* issued by the Ministry of Environment, Conservation and Parks (MECP) for air emissions. In accordance with permit conditions, the site maintains emission summary and dispersion modelling reports and acoustic assessment reports that demonstrate compliance to relevant legislation. An annual summary report is submitted to the MECP. Monitoring of airborne emissions is not required by the MECP. Due to the additional regulation by the CNSC, uranium stack emissions are monitored and compared to CNSC Action Levels.

The facility performs continuous in-stack and facility perimeter air sampling for uranium. In-stack sampling is conducted by drawing a sample of air across a filter capable of trapping uranium dust. The samples are analyzed in-house daily and verified externally by an independent laboratory. Facility perimeter samples are high volume air samples drawn at five positions strategically located outside around the facility perimeter. Facility perimeter samples are analyzed externally by an independent laboratory. In both cases the external independent laboratory tests the filter papers by delayed neutron activation analysis. The minimum detection limit is 0.01 µg uranium. Results are compared to the previous results, and to relevant Internal Control Levels and Action Levels. Measured uranium air emissions are included in the estimated dose to members of the public through direct correlation with facility DRLs. Details are provided in section 3.7.12.

A summary of air effluent sampling results is summarized by stack in Table 24. Results are trended over five years as shown in Figure 7. Air emission concentrations are reported using third party measurements, with exception of the highest value recorded, which is reported from in-house measurements.

The facility perimeter air quality results are summarized in Table 25. The average and maximum facility perimeter air quality monitor results are trended over five years in Figure 8 and consist of very low uranium in air concentrations and well below the Action Level of 0.08 µg/m^3.

Uranium in Air Effluent					
Stack Description	**Emission Contaminant**	**Total Number of Samples**	**Action Level (µg/m^3) (# Samples Exceeding Level)**	**Highest Value Recorded (µg/m^3)**	**Average Value Recorded (µg/m^3)**
Rotoclone	Uranium	251	1.0 (0)	0.145	0.014
6H-68	Uranium	251	1.0 (0)	0.086	0.010
4H-48	Uranium	251	1.0 (0)	0.118	0.008
Furnace #1	Uranium	251	1.0 (0)	0.158	0.023
Furnace #2/4	Uranium	251	1.0 (0)	0.263	0.038
Furnace #5/6	Uranium	251	1.0 (0)	0.257	0.033

Table 24: Uranium in Air Effluent Summary

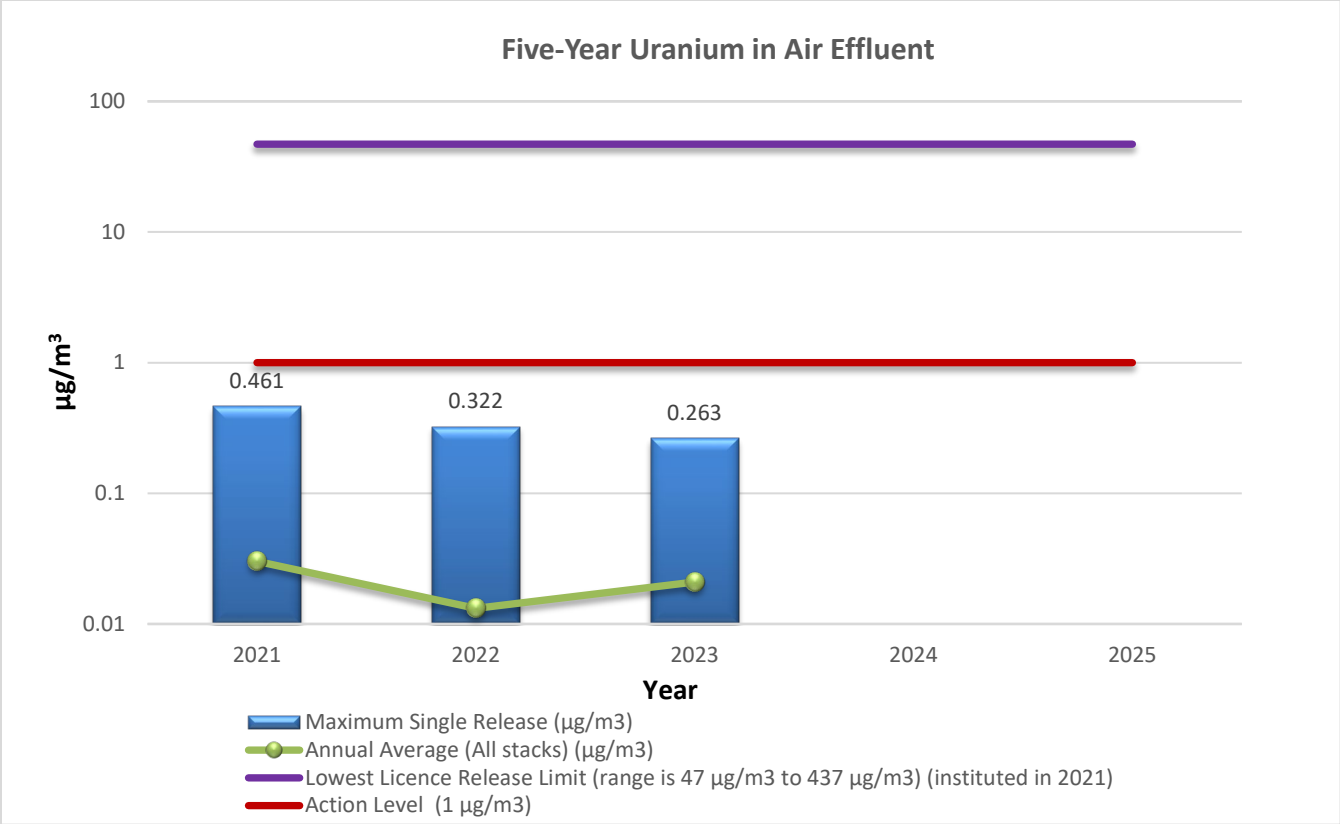

Figure 7: Five-Year Uranium in Air Effluent

Note: the above graph has a logarithmic scale

	2019	2020	2021	2022	2023
Number of Facility Perimeter Air Samples Taken	260	265	260	260	260
Number of Samples > Action Level (0.08 µg/m^3)	0	0	0	0	0
Average Concentration (µg U/m^3)	0.000	0.000	0.000	0.000	0.000
Highest Value Recorded (µg U/m^3)	0.001	0.003	0.003	0.005	0.003

Table 25: Summary of Facility Perimeter Air Monitoring

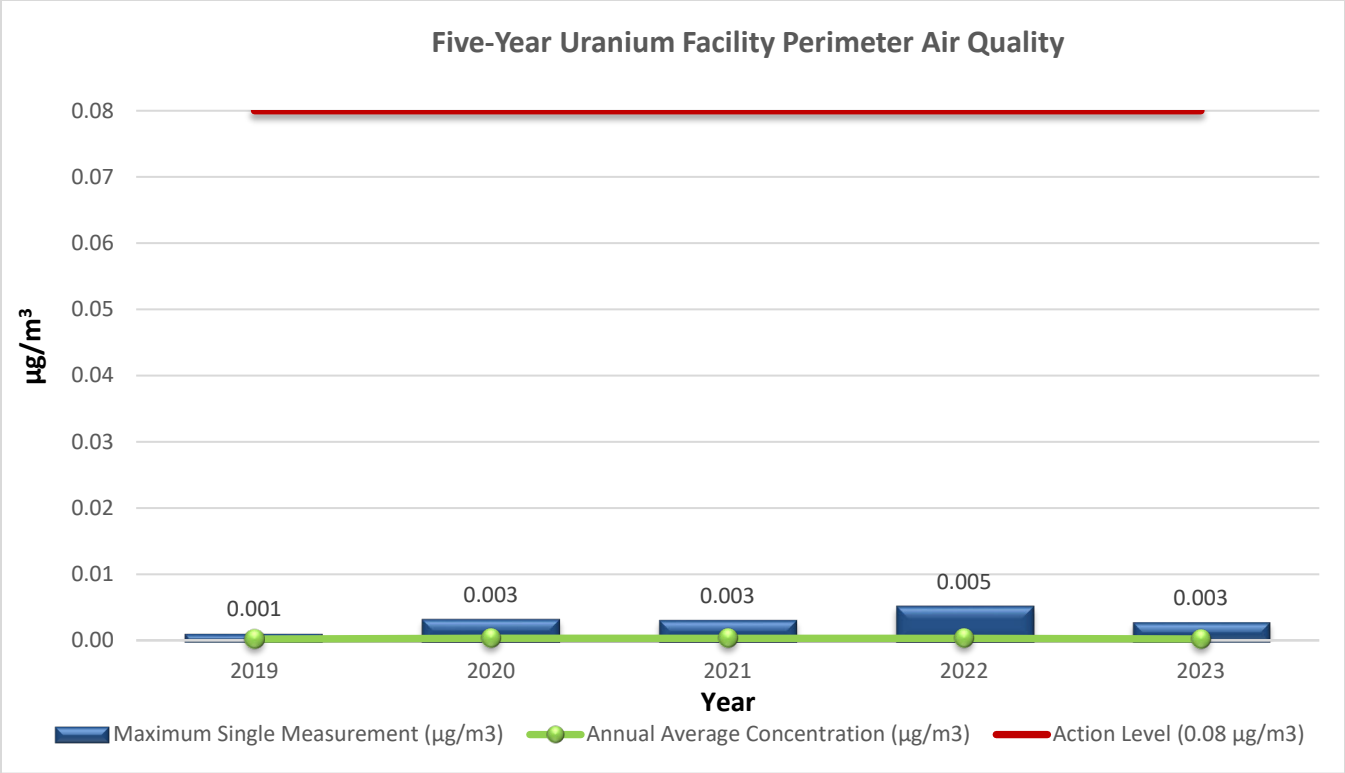

Figure 8: Five-Year Annual Facility Perimeter Air Monitoring

3.9.6 Water Effluent Monitoring

Water is used to clean protective clothing, walls, floors, equipment and in various other janitorial functions. The water is treated to remove UO_2 and the concentration of UO_2 in waste water leaving the treatment system is measured in-house. The concentration of UO_2 in the total waste water leaving the plant premises is calculated and compared to the Internal Control Level of 3 ppm and the Action Level of 6 ppm (per batch). Maximum values reported are calculated from the analyzed in-house samples. In addition, a weekly composite sample is prepared and sent for independent analysis at an accredited external laboratory. The minimum detectable concentration is 0.000001 mg U/L or parts per million (ppm). Averages and annual releases are calculated from the weekly composite samples.

The water effluent treatment system operates as follows:

1. Waste water is held in batches.
2. Each batch is treated, then sampled.
3. Each batch is only released when in-house sample results confirm the concentration is less than 3 ppm (note: The Action Level for a batch is 6 ppm).

Results from water effluent monitoring are summarized in Table 26. Sample measurements are taken at the point of release. Annual discharges for uranium are trended in Figure 10. Total water effluent releases are showing a steady trend. Results continue to remain low and below the Action Levels of 6 ppm (per batch) and 3 ppm (annual average).

	2019	2020	2021	2022	2023
Total Amount of Liquid Discharged (L) (from Uranium Processing Areas)	1,232,765	1,493,860	1,368,270	1,222,850	1,262,510
Maximum Uranium Concentration (at the point of release) (ppm)	2.58	2.79	2.55	2.82	2.51
Number of Samples Exceeding Action Level (6 ppm per batch)	0	0	0	0	0
Annual Average Uranium Concentration (at the point of release) (ppm)	0.46	0.24	0.28	0.23	0.28
Number of Samples Exceeding Action Level (3 ppm annual average)	0	0	0	0	0
Minimum pH	6.5	6.0	6.7	6.9	6.7
Average pH	7.6	7.2	7.4	7.3	7.1
Maximum pH	8.5	8.6	8.6	7.9	7.8

Table 26: Water Effluent Monitoring Summary

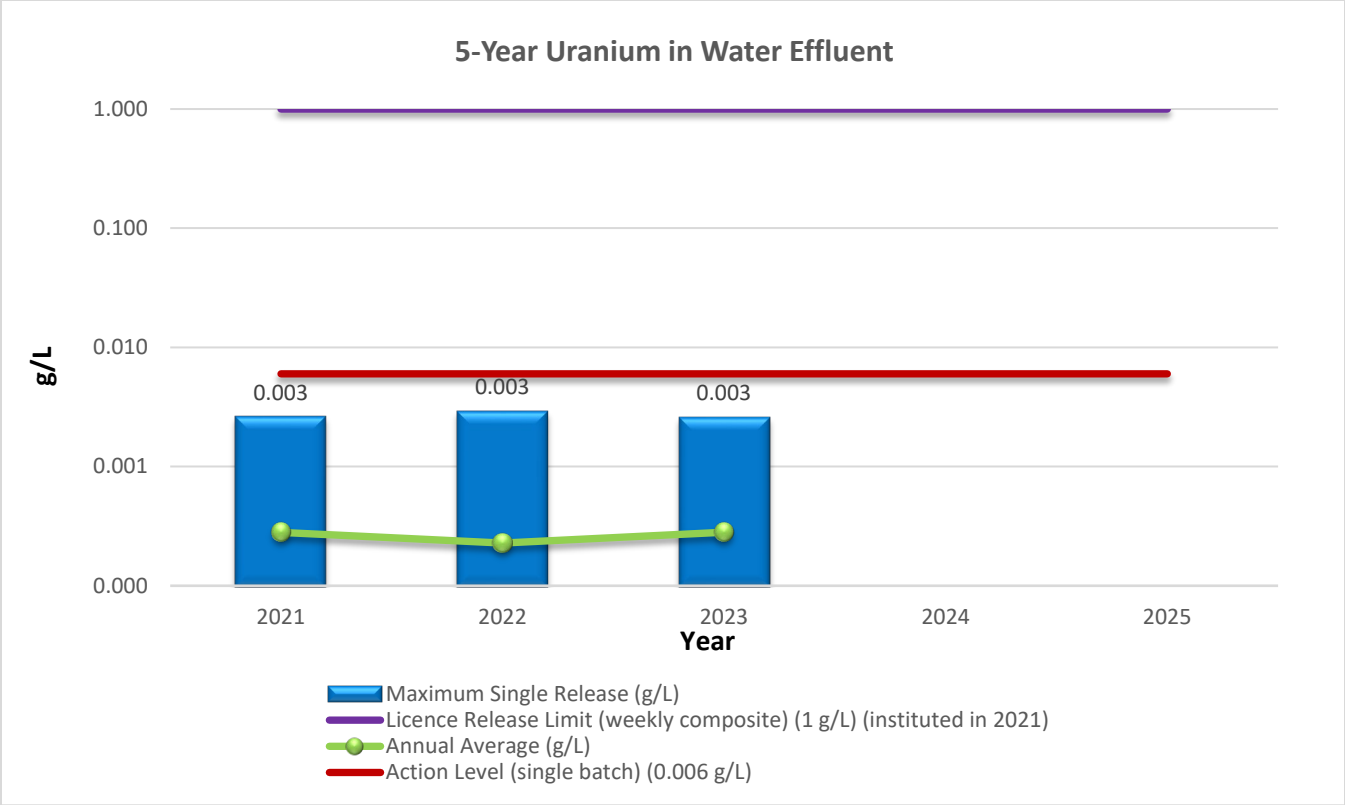

Figure 9: Five-Year Uranium in Water Effluent

Note: the above graph has a logarithmic scale

3.9.7 Soil Sampling Measurements/Monitoring

3.9.7.1 Uranium

Uranium may be detected at low levels in various rocks, ores, soil, water, air and plants. In Ontario, background levels of uranium in soil are generally below 2.5 µg/g (parts per million (ppm)). The Canadian Council of Ministers of the Environment (CCME) have established soil quality guidelines to protect human health and the natural environment. The guidelines represent levels of uranium in soil below which no risk to human health is expected. For residential and parkland land use, the guideline is 23 µg/g; for commercial land use, the guideline is 33 µg/g; for industrial land use the guideline is 300 µg/g. These guidelines have been adopted by the MECP and are listed in Ontario Regulation 153/04. Uranium content in soil at concentrations higher than the MECP standards suggest a need for further assessment, and mitigation of the source of the uranium to eliminate potential exposure and environmental impairment.

Depositions of uranium are measured by taking small samples of surface soil and analyzing for natural uranium. Uranium in soil sampling is conducted annually by a third-party consultant. If soil analysis indicates rising natural uranium levels, emissions may have increased, and investigation is made into the cause.

Facility UO_2 air emissions are the primary pathway for potential release into the natural environment by impingement on the ground surface in the immediate vicinity of the facility depending on the wind direction. UO2 is insoluble in water but may be washed into the soil by rainfall, snow, etc. Surface uranium levels will indicate deposited emissions. Continuous ambient air monitoring units are installed at the perimeter of the facility (boundary air monitors) to verify the effectiveness of the emission control systems. No concerns have been detected regarding release of uranium as sampled at the perimeter/boundary air monitoring units which is consistent with very low emissions as measured at the emission stacks.

Samples of surface soil were retrieved from 32 locations in accordance with a documented plan. The sampling methodology used is based on the MECP *Guidelines on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, December 1996, ISBN-0-7778-4056-1. Annually, the five-year average wind data obtained from Toronto Pearson Airport climate data centre (located approximately 12 kilometers west of the facility), is reviewed and used to confirm the appropriateness of the selected soil sampling locations. The data shows prevalent winds from north to south-west. Three quality control soil samples at a background location approximately 10 km north of the facility are also taken, along with three blind duplicate samples for field quality control purposes. The soil samples are stored in a cooler with ice and transported for analysis at an independent accredited laboratory by Inductively Coupled Plasma Mass Spectrometry for uranium content. The minimum detectable concentration is 0.05 part per million (0.05 µg U/g). Results are compared to previous years and the CCME guidelines. A summary of results taken in the reporting period is listed in Table 27.

	Location Description		
	On BWXT NEC property	**On industrial/commercial lands, i.e., south rail lands**	**All other locations, i.e., residential**
Relevant CCME Guideline (µg U/g)	**300 µg U/g**	**33 µg U/g**	**23 µg U/g**
Number of Samples Taken	2	2	28
Average concentration (µg U/g)	0.9	0.5	0.5
Maximum concentration (µg U/g)	1.0	0.6	0.8

Table 27: Soil Sampling Result Summary

The analytical results show a range of concentrations from 0.3 µg/g to 1.0 µg/g with all 32 sample locations having reported uranium concentrations below the Ontario background concentration of 2.5 µg/g. These results are well below the acceptable standard published by the MECP under Ontario Regulation 153/04 and CCME soil quality guideline. Based on the analytical results of the sampling program, there is no evidence to suggest that uranium used at the BWXT facility has had a negative impact on Toronto soils. No safety risk associated with the presence of uranium has been identified to the public in the community surrounding the BWXT NEC facility.

3.10 Emergency Management and Fire Protection

The emergency preparedness and fire protection programs are well-established and effective. The facility has established an emergency plan that describes the actions to be taken to minimize the health and environmental hazards, which may result from fires, explosions, or the release of hazardous materials. The plan is intended to reduce the risk of fires within the facility and assist emergency staff and plant personnel in understanding key emergency response issues, and assist the facility in protecting employees, the local community, and the environment through sound emergency management practices. The emergency plan is developed in accordance with standards and meets the CNSC licence requirements.

Continuous improvement is achieved through several review processes, including site inspections, reported safety concerns, near miss and incident investigations, drills, and self-assessments. Non-conformances are tracked to closure, during the reporting period there were 32 corrective actions categorized as emergency preparedness/fire protection.

There were no events that activated the Emergency Organization during the reporting period.

There were no events that occurred in the reporting period that triggered a response from Toronto Fire Services.

3.10.1 Emergency Preparedness Program Activities

The facility implemented program improvements, which focused on cross training and drill management. There were a number of improvements recommended as a result of drills in the areas of drill development, emergency equipment, training, communication, and emergency protocols.

Emergency preparedness development is achieved through response drills where actual responses are critiqued to continually improve the effectiveness of the process and the capability of responders. These are conducted at least annually. All employees are trained on established fire prevention measures, emergency situation responses, emergency evacuation routes and their responsibilities. Awareness training is conducted during new employee orientation and refreshed through response drills. On-site emergency responders are provided with the level of training necessary to allow them to effectively perform their designated functions as defined in the facility training matrix. Training course completion is summarized in Table 4.

Tests of the emergency plans were performed in the following area:

1. Fire drills (three)
2. Fire safety/evacuation and injured person (one)
3. Fire event involving ERO participation (two)
4. Medical response (one)

Toronto Fire Services participated in the “fire event/evacuation and injured person” drill. This drill was evaluated, and a Fire Response Needs Assessment Drill Assessment completed to verify compliance with the CSA N393-13 standard *Fire protection for facilities that process, handle, or store nuclear substances* clause 11.2. There were identified nine (9) opportunities for improvement to improve future drill exercises and enhance emergency preparedness at the Toronto facility.

3.10.2 Fire Protection Program Activities

The Fire Protection program describes the systems and resources available to prevent and detect fire and to minimize impact from a fire event and consist of the following key elements:

Fire and Life Safety Features;

- Inspection and Maintenance;
- Fire Protection Assessment;
- Fire Protection;
- Housekeeping;
- Minimization of Combustibles;
- Ignition Source Control;
- Impairment;
- Design for the Prevention and Mitigation of Fires;
- Training;
- Outside Coordination; and,

- Program Assessment.

The documented fire hazards analysis (FHA) identifies the facility fire hazards and their potential impact on worker and public safety, and asset protection. A five-year update of the FHA was completed in 2023 to demonstrate the fire protection goals and safety performance criteria of CSA N393:13 is being met at the facility.

The facility maintains a documented fire safety plan that is developed in accordance with the *National Fire Code of Canada*, the *National Building Code of Canada* and CSA N393-13, *Fire protection for facilities that process, handle, or store nuclear substances*. The fire safety plan is based on the documented FHA and ensures that measures are appropriate to the facility. It provides information on resources in the buildings, emergency procedures and actions to be taken in the event of a fire. It includes training, duties of designated personnel, details of maintenance procedures and fire protection measures. The information assists the occupants in utilizing life safety features in the buildings, ensures an orderly evacuation at the time of an emergency and provides a maximum degree of flexibility to achieve the necessary fire safety for the buildings. In 2023, an audit of the Fire Protection Program was completed; except for seven minor findings, it was concluded that BWXT and its Fire Protection Program met the objectives defined in CSA N393-13.

Fire protection systems are inspected and tested in accordance with the *National Fire Code of Canada* following an established schedule. A third-party review and internal self-assessment is conducted annually. Identified continuous improvements are tracked to completion using the ATS.

During the reporting period, BWXT NEC continued to work with Toronto Fire Services to establish a clear basis for contingency response planning between the organizations to deal with fire and rescue emergency situations. This included the successful completion of two emergency response drills.

The program facilitates effective communication and exchange of relevant information, and assures timely, reliable, and effective decision-making and response actions. Site hazard reviews and site familiarization tours are scheduled annually with Toronto Fire Services. Approximately 60 Toronto Fire Services employees participated in the tours in 2023.

Physical plant changes are periodically made to improve the fire protection program. Minor changes to improve the fire protection program were completed including fire panel battery replacement, and the repair of damaged fire separations (i.e., fire stopping openings and ceiling tile replacement). Drip drain assemblies were installed in early 2023 as a preventative measure in various Building 9 locations following a sprinkler pipe incident in 2022.

3.11 Waste Management

The "Waste Management" Safety and Control Area covers internal waste and by-product 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 and by-product management facility. This Safety and Control Area also covers the ongoing decontamination and planning for decommissioning activities.

Radioactive wastes are any materials that contain a nuclear substance, and which have been declared to be waste. BWXT NEC has an effective and well-established radioactive waste disposal program that ensures all radioactive waste disposals are compliant with the *Nuclear Safety and Control Act* and associated regulations and the facility licence conditions. Radioactive waste generated from fuel manufacturing, which consist of, or are contaminated by uranium are accumulated in controlled and classified areas. These are compacted for volume reduction where possible and shipped routinely to a licensed radioactive waste disposal facility. Only about 0.1% of the uranium that is processed ends up in waste streams. Nearly all nuclear material is used in the product or recycled back to the supplier.

Waste management and generation details are further described in Appendix B, submitted to the CNSC separately.

BWXT NEC maintains a preliminary decommissioning plan (PDPs) and financial guarantee in accordance with CNSC Regulatory Guide G-219 *Decommissioning Planning for Licensed Activities*, CNSC Regulatory Guide G-206 *Financial Guarantees for the Decommissioning of Licensed Activities*, and CSA N294-09 *Decommissioning of Facilities Containing Nuclear Substances*. The PDP strategy and end-state objective of decommissioning is to release the site from regulatory control for industrial use or demolition of the structures.

In November of 2022, BWXT NEC submitted an updated PDP to CNSC staff, which was determined to be acceptable to staff in October of 2023. As a result, BWXT NEC requested approval of the resulting financial guarantee amount by the CNSC Commission in November of 2023. This matter is currently pending Commission decision.

3.12 Security

The "Security" Safety and Control Area covers the programs required to implement and support the security requirements stipulated in the regulations and in the operating licence.

The facility maintains a security program in accordance with the *General Nuclear Safety and Control Regulations*, *Class I Nuclear Facilities Regulations*, and the *Nuclear Security Regulations*. The security program outlines the systems, processes and responsibilities for performing security operations with the objective of maintaining safe and secure facilities. The program manual identifies the individual responsibilities for implementation and maintenance of the program. The manual includes instructions for administering the security program, provides the basis for security protocols and identifies the controls in place to meet regulatory requirements. Program details are prescribed information and confidential. Examples of security measures in place at both facilities include:

- Access control (access cards and locked restricted-access areas);
- Facility Access Security Clearance program;
- Security guards;
- Security barriers;
- Intrusion detection systems; and,
- Preventing the unauthorized removal of nuclear material.

3.13 Safeguards and Non-Proliferation

The "Safeguards and Non-proliferation" Safety and Control Area covers the programs required for the successful implementation of the obligations arising from the *Canada/IAEA Safeguards and Non-proliferation Agreement*. BWXT NEC has implemented and maintains a safeguards program and undertakes all required measures to ensure safeguards implementation in accordance with IAEA commitments and CNSC regulatory document REGDOC-2.13.1 *Safeguards and Nuclear Material Accountancy* (which superseded RD-336 *Accounting and Reporting of Nuclear Material*). Movement of safeguarded nuclear material (inventory changes) are documented and reported to the CNSC as required.

BWXT NEC has implemented and maintained a well-established Safeguards program throughout the licence period and undertakes all required measures to ensure IAEA commitments and CNSC regulatory

requirements are met. BWXT NEC reports all Inventory Change Documents for both facilities through the Nuclear Materials Accountancy Reporting system.

The Physical Inventory Taking, was conducted on July 30th, 2023. Physical Inventory Verification and Design Information Verification involving the CNSC and the IAEA followed on July 31st and August 1st, 2023. The scope of the Physical Inventory Verification concerned book examination, physical verification of nuclear material and evaluation of the quality and performance of BWXT NEC's measurement system. The scope of the Design Information Verification concerned verification of the facility, general building design, essential equipment, accounting procedures, operator's measurement system, nuclear material characteristics, nuclear material location & flow and operational status of the facility. Short Notice Random Inspections were conducted by the IAEA on April 18th and December 14th, 2023. The inspections involved physical examination of powder drums and scrap drums with pellet and powder samples taken for further analysis by the IAEA. No non-conformances were noted.

3.14 Packaging and Transport of Nuclear Substances

The "Packaging and Transport of Nuclear Substances" Safety and Control Area covers the packaging and transport of nuclear substances and other nuclear materials to and from the licensed facilities. In the reporting period, all packaging and shipments to and from both facilities were conducted safely according to applicable regulations. Shipments of dangerous goods are not routinely made from BWXT NEC by air, rail or water. Routine road shipments of both dangerous goods and non-dangerous goods are made between suppliers, the Toronto plant, the Peterborough plant and customer nuclear generating stations. Shipments of prescribed substances are only made to:

- Persons in Canada, holding a valid CNSC Licence to possess such prescribed substances; or,
- Persons in Canada, not requiring a valid CNSC Licence by virtue of the *Nuclear Safety and Control Act* and regulations; or,
- Persons outside Canada, as approved by an Export Permit, CNSC Export Licence, or combination of CNSC Export Licence and reference to General Export Permit as applicable.

The transportation of dangerous goods in Canada is regulated by Transport Canada through the *Transportation of Dangerous Goods Regulations*. Additional requirements for the transport of Class 7 radioactive materials is regulated by the CNSC through the *Packaging and Transportation of Nuclear Substances Regulations*. In addition, the IAEA has established uniform regulations for all modes of transportation throughout the world. The IAEA has published the *Regulations for the Safe Transport of Radioactive Material* and the CNSC has endorsed these through the *Packaging and Transport of Nuclear Substances Regulations*.

BWXT NEC has an established *Emergency Response Assistance Plan* compliant to Part 7 of the *Transportation of Dangerous Goods Regulations*. In 2022 the plan was revised and approved by Transport Canada. It is in place to ensure that timely and effective response protocols are in place with the intent to protect public safety, property and the environment in the event of an accident involving the transportation of natural or depleted UO_2. Transportation of uranium materials to and from BWXT NEC are included in the plan. There were no CNSC inspections focused on the packaging and transport of nuclear substances during the reporting period.

4 OTHER MATTERS OF REGULATORY INTEREST

4.1 Public Information Program

4.1.1 Employee/Internal Communications

BWXT NEC uses a variety of means to engage its ~40 employees in Toronto. The company uses the employee portal (intranet), electronic bulletin boards, email alerts and printed communications to issue company news, executive blogs and general business updates. The president of BWXT NEC shared a year-end video for all sites in the fourth quarter of the year. Open communication is important to the president, and he encourages employees to contact him throughout the year with questions.

4.1.2 Government Stakeholders

BWXT NEC places great importance on its relationships with all levels of government in the communities in which it operates and works to ensure there is open communication and awareness of BWXT NEC's operating activities. In 2023, BWXT NEC emailed nine electronic updates to the MP and MPP for Davenport and the Councillor for Davenport. These communications provided elected officials in Toronto with information about meetings and community events, and other relevant information. In 2023, no facility tours were conducted with elected officials in Toronto.

4.1.3 Indigenous Relations

BWXT Canada (which includes BWXT NEC) has been a member of the Canadian Council for Aboriginal Business (CCAB) since September of 2017 and is currently Progressive Aboriginal Relations (PAR) Certified at the committed level. This signifies BWXT Canada's commitment to continuous improvement in Indigenous relations and intention to undergo external verification of performance in the future.

BWXT Canada's Indigenous Relations Committee meets regularly to review objectives outlined in the PAR criteria as the company works to find ways to strengthen its ties with Indigenous communities.

The company is also an active member within the Indigenous Relations Suppliers Network established by Bruce Power and Indigenous Opportunities in Nuclear program established by Ontario Power Generation. Overall, the CCAB PAR program supports BWXT NEC's commitment to engaging with Indigenous communities and working together to build and sustain meaningful long-term relationships. More information on BWXT NEC's commitment to Indigenous relations, including our policy, can be found at nec.bwxt.com under the Community tab.

4.1.4 Community Relations

BWXT NEC is committed to providing timely information to the communities in which it operates and works to ensure there is open two-way communication and awareness of BWXT NEC's operating activities. Throughout 2023, BWXT NEC utilized a variety of communication channels to provide information to its neighbours, including electronic email updates to its contact list (which includes interested members of the public), banners along the fence line, newsletters, mailers, social media and targeted advertising on Facebook. Community members can sign up to join BWXT NEC's email updates anytime by contacting the company at questions@bwxt.com or by submitting their information by clicking on our online form https://www.bwxt.com/bwxt-nec/contact-us-1

4.1.5 Community Volunteerism

In 2023, BWXT NEC employees volunteered for the company's Toronto community barbeque, helping to plan and execute the event. BWXT NEC looks forward to coordinating more events in the future with the addition of a Toronto-based communications specialist role in 2024.

4.1.6 Community Investment

In Toronto, BWXT NEC made charitable contributions to the Toronto District School Board's Western Technical Commercial School for both their FIRST Robotics Program as well as two bursary awards for students continuing education in a STEM field. BWXT NEC also made charitable contributions to the Davenport-Perth Neighbourhood and Community Health Centre, Ontario Tech University, and Oasis Dufferin Community Centre.

4.1.7 Tours

BWXT NEC provides facility tours to help engage members of the industry, local elected officials, Indigenous communities and interested members of the public in an effort to help better understand our business. In 2023, no facility tours occurred.

BWXT NEC created a virtual tour of its Peterborough facility, which is posted on its website accessible by anyone in the community or the public at large. BWXT NEC is considering the development of a virtual tour video for Toronto in 2025.

4.1.8 Community Events

In 2023, BWXT NEC hosted an in-person community barbeque at our Toronto facility. The event attracted more than 150 community members who were offered an opportunity to learn more, and ask questions, about our operations.

A Community Webinar was held in the evening on November 30, 2023. The webinar provided a means to engage neighbours, community members and other stakeholders, and to educate them about our business. There were 11 registrants on the live webinar and BWXT NEC representatives were available to answer questions. A question-and-answer period lasted for up to 30 minutes. The webinar recording is available on BWXT NEC's public website (nec.bwxt.com). BWXT NEC leadership presented an informative slideshow containing information about the company, safety and compliance, public information program, licence renewal, and facts about natural uranium. Throughout the webinar, viewers could submit their questions in the comment section and BWXT NEC would address these questions live in the video feed. BWXT NEC issued invitations to the Community Webinar in mailers sent to neighbours, on the dedicated website, on social media and used targeted Facebook advertising to share the invitation details.

4.1.9 Community Newsletters

BWXT NEC distributes by mail, and posts to its website, community newsletters as a tool to share information with the local Toronto community about the company's operational performance, health and safety, CNSC licence, activities in the community and general information. Two (2) newsletters were mailed to the Toronto surrounding community in June and November of 2023. The newsletters were also posted to our public information website, emailed to our contact list and shared on social media. Toronto newsletters are additionally translated to Portuguese and shared on the BWXT NEC's website.

4.1.10 Community Liaison Committee - Toronto

The Toronto CLC was established in 2013 and meets three to four times per year. The CLC is a forum for the exchange of information between the community and BWXT NEC and allows members to bring forward questions, discuss concerns and identify opportunities to improve community relations. In 2023, most meetings were held in person at the Toronto BWXT NEC facility in the evenings.

BWXT NEC held a new member orientation on March 15th (virtual). BWXT NEC subsequently met in person with the CLC on April 11th, June 29th and September 7th. CLC members were invited to the Community Barbeque which was held on September 21st and one CLC member attended. BWXT NEC held a virtual year-end meeting on November 23rd. Meeting records are posted on the company's website.

In 2023, during these meetings, CLC met with BWXT NEC to discuss the facility's operations and receive updates on topics such as the Annual Compliance Report, emergency exercises and program, public disclosure protocol, public surveying, community updates, environmental monitoring information, safety scenarios, public information program updates, events, community outreach and support, media coverage, community opposition groups, CLC recruitment, and more.

In 2023, the CLC had a membership of four external members (including a representative from the Toronto Police Service). BWXT NEC launched a recruitment campaign in the fall of 2023 to attract new members to the CLC. One application was received. After careful review, the application was accepted, and the applicant will join the committee in 2024.

4.1.11 Website

BWXT NEC has a dedicated public information website, located at nec.bwxt.com. The website provides information about the company's operations and activities that can be accessed by members of the public and other key stakeholders 24/7.

In 2023, there were 15,790 sessions from 12,779 users. Top pages visited were: Home page (27%), About Peterborough (8%), About Us (6%), Contact Us (4%) and About Toronto (3%).

Over the course of 2023, new information was regularly updated on the website. The following represents some of the updates that were posted:

- Public disclosures
- Document summaries and environmental information
- Frequently asked questions
- Peterborough and Toronto CLC (meeting minutes, recruitment)
- Copies of the Toronto and Peterborough newsletters
- Community event information
- Annual Compliance Report information
- Notice of CNSC's annual public meeting

4.1.12 Information Brochures

BWXT NEC maintains public information brochures, which are updated on a yearly basis, when new information becomes available from the Annual Compliance Report. These brochures are available in

Toronto during tours and meetings, and are also posted on our public website. Brochures are used as information tools at community events like job fairs and community barbeques.

4.1.13 Public Inquiries

Members of the public can contact BWXT NEC by dialing our toll-free number, 1.855.696.9588 and/or emailing us at questions@bwxt.com. These contact details appear on BWXT NEC's website and in community newsletters and public information brochures.

In 2023, 1503 emails were received by questions@bwxt.com, the majority of which were spam, questions for finance or purchasing, job seekers or agencies seeking employment verifications. In 2023, there were 228 calls to the 1.855.696.9588 toll free number, most of which were related to employment verification, procurement, community giving or public/media relations. We encourage community members to use this outlet to contact us with questions, comments, and concerns. All emails and calls to the information line were appropriately handled and addressed.

4.1.14 Earned Media

In 2023, there was one mention of BWXT NEC in Toronto news media.

4.1.15 Social Media

In October of 2020, BWXT NEC launched its own dedicated Facebook and Twitter social media platforms to better engage with its community members. Social media channels help BWXT NEC share information about activities with the public in a timely way. In 2023, BWXT NEC issued two to four social media posts each week on X (formerly Twitter) and Facebook. Post topics included information about BWXT NEC's operations, invitations to events, job postings, community giving and involvement, CLC recruitment, educational information, industry highlights, and more.

4.1.16 Public Disclosure Protocol

BWXT NEC has a Public Disclosure Protocol in place that sets guidelines for providing timely information to interested members of the public and other stakeholders. This Protocol and any Public Disclosures issued by BWXT NEC can be found at nec.bwxt.com under the Community tab. The Public Disclosure Protocol document is also available in full on the website as a PDF. There were two (2) public disclosures made in 2023.

4.2 Cost Recovery

BWXT NEC is current on its cost recovery payments to the CNSC.

4.3 Financial Guarantees

A PDP and associated decommissioning cost estimate are in place in accordance with CNSC Regulatory Guide G-206 *Financial Guarantees for the Decommissioning of Licensed Activities*, CNSC Regulatory Guide G-219 *Decommissioning Planning for Licensed Activities*, and CSA N294-09 *Decommissioning of Facilities Containing Nuclear Substances*. The PDP strategy and end-state objective of decommissioning is to release the site from regulatory control for industrial use or demolition of the structures.

On December 22nd, 2020 the CNSC in its relicensing decision accepted the proposed financial guarantee amount and financial instruments. The financial instruments remain valid in the format approved by the CNSC. The issuers of the financial guarantee instruments remain in good standing. The financial rating of the financial guarantee issuers were provided to the CNSC in March of 2024.

In November of 2022, BWXT NEC submitted an updated PDP to CNSC staff, which was determined to be acceptable to staff in October of 2023. As a result, BWXT NEC requested approval of the resulting financial guarantee amount by the CNSC Commission in November of 2023. This matter is currently pending Commission decision.

4.4 Improvement Plans and Future Outlook

BWXT NEC remains committed to continuously improve its EHS programs to improve efficiency and minimize risk to employees, the public and the environment. Facility operations are projected to remain consistent in 2024. Fuel production levels are projected to be lower than the amount processed in 2023.

5 CONCLUDING REMARKS

BWXT NEC is committed to the establishment and continuous improvement of a healthy safety culture. Safety culture refers to the core values and behaviours resulting from a collective commitment by our company's leaders and individuals to emphasize safety, quality, ethics, and security over competing goals to ensure protection of employees, the public and the environment. It is a top business priority to continuously improve our EHS systems to protect fellow employees, the environment, and our communities against environmental, health and safety hazards. BWXT NEC management recognizes, reviews, prioritizes and controls workplace hazards and ensures compliance with applicable regulatory requirements, applicable codes and company policies.

Governed by an integrated management system, conventional health and safety, radiation protection and environmental protection programs are well implemented. All radiation dose measurement results were below Internal Control Levels, Action Levels and regulatory limits. Environmental protection programs are well implemented. There were no reportable events during the reporting period. Facility emission results were very low and below Internal Control Levels, Action Levels and regulatory limits. Annual releases to the air and water were both a very small fraction of regulatory limits. Public dose was a small fraction of the public dose limit.

All production and possession limits were respected. Transportation of dangerous goods was conducted safely between suppliers, customers and waste vendors without risk to workers, the public or the environment.

This annual compliance monitoring and operational performance report demonstrates that BWXT NEC has successfully met the requirements of the *Nuclear Safety and Control Act*, regulations and CNSC Class IB Nuclear Fuel Facility Licence requirements.