



Nuclear Energy Canada Inc.

BWXT Nuclear Energy Canada Inc.

Toronto Nuclear Fuel Pellet Operations Preliminary Decommissioning Plan Summary

BWXT Nuclear Energy Canada Inc.'s (BWXT NEC) Toronto operation processes ceramic grade uranium dioxide (UO_2) powder to industry-grade natural uranium fuel pellets.

The facility processes both natural and depleted ceramic grade UO_2 powder to industry-grade uranium fuel pellets for use primarily in CANDU (Canadian Deuterium Uranium) reactor fuel bundles.



The Facility

Ceramic grade UO_2 powder is received in Type IP-1 steel drums from the Cameco Port Hope Facility or alternate supplier. This powder is pressed into pellet-shape and sintered in hydrogen atmosphere furnaces at high temperature. The sintered pellets are hard and ceramic. Sintered pellets are ground to the required diameter, inspected and wrapped for shipment to BWXT NEC's

Peterborough facility. In Peterborough, the pellets are loaded into zirconium sheaths and assembled into bundles.



The Toronto facility is located on the east side of Lansdowne Avenue, north of Dupont Street in Toronto, Ontario at 1025 Lansdowne Avenue, Toronto, Ontario. BWXT NEC's property comprises a parking lot and two buildings, known as Building 7 and Building 9. GE Canada retains ownership of the property and leases the structures to BWXT NEC under a lease agreement.

Building 7 is municipally addressed as 1025 Lansdowne Avenue, Toronto, Ontario, and houses uranium dioxide pellet manufacturing operations on the first, second, and third floors. The fourth floor contains offices used for administration purposes and office space for BWXT NEC Toronto personnel. Building 9 is municipally addressed as 155 Brandon Avenue, Toronto, Ontario. It is used to temporarily store uranium wastes. The remaining portion of the property between the two buildings is used as a parking lot. In addition, a liquid Hydrogen storage facility is

located outside, to the northeast of Building 7.

Preliminary Decommissioning Plan Summary

Our Preliminary Decommissioning Plan (PDP) and associated Decommissioning Cost Estimate (DCE) has been performed to determine the amount of the financial guarantee required in accordance with Canadian Nuclear Safety Commission (CNSC) Regulatory Guide G-206 Financial Guarantees for the Decommissioning of Licensed Activities, and Regulatory Guide G-219 Decommissioning Planning for Licensed Activities.

Strategy

The preferred decommissioning strategy for the BWXT NEC Toronto operation is to release the entire licensed property (including land and buildings) from regulatory control for reuse or demolition of the structures. This decommissioning approach calls for the prompt removal and off-site disposal of radioactive contamination and other hazardous materials in excess of established clearance levels as required to meet the release criteria established by the CNSC for a Licence to Abandon.

Hazards

There are potential radiological exposures associated with the handling of uranium dioxide. An effective radiation protection program is in place at the facility and radiation doses received by persons who work at the facility are a fraction of the applicable dose limit. With the facility shutdown, radiation doses would be further reduced and the radiation protection program would be maintained. Therefore, radiation hazards to workers during decommissioning would be similar to, or less than, radiation hazards present during normal operations.

Similarly, environmental releases and public dose during normal operations are both a very small fraction of the licensed release limit and public dose limit respectively. Emissions and public doses will be reduced even further during the decommissioning period.

All decommissioning work will be completed with strict adherence to BWXT NEC's Radiation Protection Manual and Environmental Health and Safety Manual. Where applicable, these documents will be used as a benchmark for the design and implementation of decommissioning-specific programs, procedures and plans including:

- Radiation Protection.
- Hazardous Material Handling and Industrial Safety.
- Environmental Protection.
- Health and Safety.
- Utility Management.
- Fire Protection and Emergency Response.
- Training.

Approach

The decommissioning of the site will take place in four phases. These phases include:

- Phase 1: Post Operational Shutdown and Completion of Characterization Survey;
- Phase 2: Completion of a Detailed Decommissioning Plan (DDP) and Submission to CNSC;
- Phase 3: Decommissioning of Property; and
- Phase 4: Completion of Final Surveys, CNSC Sign-Off and Application of Licence to Abandon.

During post-operational shutdown, waste and materials in inventory will be removed and an interior and exterior characterization survey will be completed at the site to determine the level of uranium impacts at the

facility. The information collected in the characterization survey will be used as input to the DDP.

All production machinery, together with associated ventilation and filtration equipment would either be disposed of as radioactive waste, decontaminated and disposed of as unrestricted waste or decontaminated for other use. All building infrastructure in the three operating floors (HVAC, piping and light fixtures) would be removed and cleaned for unrestricted disposal, or disposal as Low Level Waste (LLW).

The existing Radiation Protection Manual will form the basis for radiation protection during decommissioning. All decommissioning work will be completed in strict adherence to BWXT NEC's Radiation Protection Manual. Where required, further development of plans and protocols in support of radiation protection and personnel dosimetry to ensure doses are kept as low as reasonably achievable, will be completed. All decommissioning workers would be classified as Nuclear Energy Workers. Workers will be required to be monitored for uranium uptake as are current production workers. They will be required to wear personal protective equipment at all times when in the working area. The existing change facilities, worker staircases, and lunch room facilities will be used as they are used for current production workers.

Final End-State Objectives

The end-state objective of the decommissioning strategy is the unrestricted release of the entire licensed property from regulatory control such that the facility lease agreement can be terminated. As such there is no predicted requirement for long-term institutional controls.

The final end-state objective for the site is unrestricted release from regulatory control

in accordance with applicable conditional and unconditional clearance levels as set out in Nuclear Substances and Radiation Devices Regulations (NSRDR) and approved by CNSC.

Cost Estimate

The cost estimate includes all labour, material, equipment, site operating expenses, CNSC regulatory fees, waste packaging, transportation and disposal costs required to decommission the facility to the end-state objective of unrestricted release for either reuse or demolition.

The total cost for decommissioning the site is estimated to be \$37,362,745 in 2024 Canadian dollars.

BWXT NEC has requested that the financial guarantee instrument be a combination of Surety Bond and Letter of Credit, with the first \$1,300,000 being satisfied by a Letter of Credit. The remaining obligation would then be satisfied by Surety Bond.

Until such time as the updated PDP amounts and financial instruments are approved, BWXT NEC maintains the existing financial guarantee amounts in the form of an irrevocable Letter of Credit.

Conclusions

BWXT NEC will undertake periodic reviews of the PDP and update it as required. The updates will reflect any changes to operations, conditions, evolving technologies and regulatory requirements. Unless otherwise dictated by significant changes to the facility, the PDP will be updated every five years. The next planned update will be performed in 2024.

Contact Us

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