



Nuclear Energy Canada Inc.

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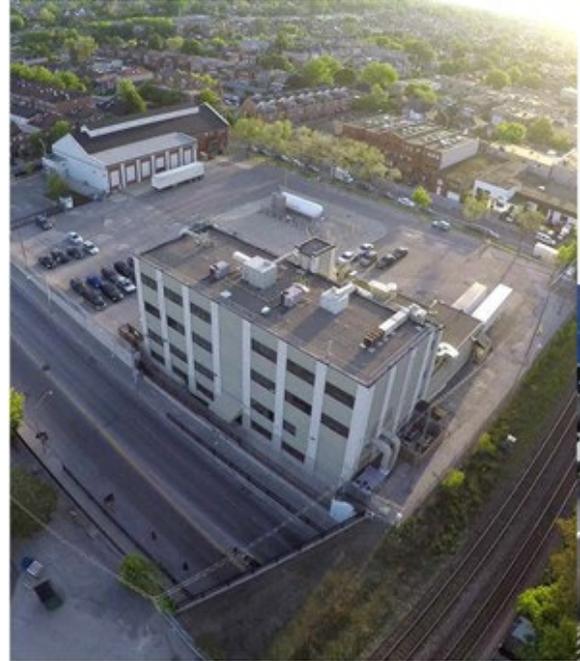
Fuel Pellet Operation Preliminary Decommissioning Plan Summary – 2023 (rev 1)

BWXT Nuclear Energy Canada Inc.'s (BWXT NEC) fuel pellet operation processes ceramic grade natural uranium dioxide (UO_2) powder into fuel pellets used 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 fuel pellet operation is located on the east side of Lansdowne Avenue, north of Dupont Street at 1025 Lansdowne Avenue, Toronto, Ontario. BWXT NEC's property comprises a parking lot and two buildings, known as Building 7 and Building 9. General Electric Canada retains ownership and leases the property to BWXT NEC.

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 office space for BWXT NEC 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

The Preliminary Decommissioning Plan (PDP) and associated Decommissioning

Cost Estimate (DCE) have been produced to determine the amount of the financial guarantee required in accordance with Canadian Nuclear Safety Commission (CNSC) regulatory documents REGDOC-2.11.2 *Decommissioning* and REGDOC-3.3.1 *Financial Guarantees for the Decommissioning of Nuclear Facilities and Termination of Licensed Activities*.

In order to ensure the PDP and associated decommissioning cost estimate are maintained current, the CNSC requires these to be updated, and revised financial guarantees approved by the CNSC Commission, at least every five years. The revision of these preliminary decommissioning plans is therefore routine, and do not imply any intention to decommission the facility at this time, nor does it imply any changes to the operations at the facility. Should BWXT wish to transition from operations to decommissioning in the future, this would require the development of a detailed decommissioning plan and would require issuance of a licence to decommission from the CNSC.

Strategy

The preferred decommissioning strategy for the BWXT NEC Fuel Pelleting Operation is for decommissioning of all licensed areas to a condition wherein the site can be released from regulatory control under a Licence to Abandon issued by the CNSC. This entails the removal of all contaminated equipment for disposal and remediating the site and structures of uranium contamination.

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 shut down, 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 and, as a result, no adverse effects are expected to human health or to non-human biota (i.e., the environmental receptors).

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.

Decommissioning activities are anticipated to generate approximately 820 m³ of uranium impacted and other hazardous waste.

Waste routes currently in use for normal operations are anticipated to be used for wastes arising from decommissioning activities. These are commercially available waste vendors, and the cost estimate does not include or rely on any on-site disposal, or disposal of wastes at any other BWXT facility location.

Final End-State Objectives

The end-state objective of the decommissioning strategy is the unrestricted release of the entire licensed property from regulatory control. As such there is no predicted requirement for long-term institutional controls. Costs for refurbishment or demolition of the structures at the conclusion of the decommissioning are outside the scope of the PDP.

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.

It is the licensee's responsibility to bear the costs of facility decommissioning at the end of life. In the case that the licensee is incapable of fulfilling that responsibility, the CNSC requires that financial guarantee instruments be maintained to cover the full costs of decommissioning. These funds are available to the CNSC, and this ensures that sufficient funds are always available for facility decommissioning.

The total cost for decommissioning the site is estimated to be \$20,429,189 in 2027 Canadian dollars.

BWXT NEC has requested that the financial guarantee instrument be a combination of Surety Bond and Letter of Credit, with the first \$1,309,094 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 guarantees.

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.

Contact Us

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