



Preliminary Decommissioning Plan and Cost Estimate

The Cameco Corporation (Cameco) Cigar Lake Operation (Cigar Lake) is located approximately 660 kilometers (kms) north of Saskatoon, Saskatchewan. Cigar Lake holds a Uranium Mine Licence from the Canadian Nuclear Safety Commission (CNSC) to prepare a site for, construct, operate, modify and decommission a nuclear facility for mining uranium ore, as well as an Approval to Operate Pollutant Control Facilities from the Saskatchewan Ministry of Environment (SMOE).

The CNSC and the SMOE require operators of licensed nuclear facilities to prepare a Preliminary Decommissioning Plan (PDP) and associated Preliminary Decommissioning Cost Estimate (PDCE) in order to ensure that taxpayers are not left responsible for cleaning up a facility if the owner/operator were to become insolvent. The PDP provides a high-level concept of how the facility would be decommissioned. The PDCE provides an estimate of the expected cost of decommissioning the facility, based on the concepts within the PDP. Cameco is required to provide a financial guarantee, such as letters of credit or surety bonds, to the Government of Saskatchewan that cover the estimated cost of decommissioning activities described in the PDP for Cigar Lake.

The cost estimates and schedule within the PDP and PDCE are based upon a conceptual decommissioning plan for the site. The financial guarantee reflects the current estimated cost of decommissioning. As the site approaches or goes into decommissioning, regulators review the detailed decommissioning plans, which can result in further regulatory process, as well as additional requirements, costs and financial assurances.

The concepts outlined in the PDP are based upon the findings of previous approved studies, including environmental assessments, which have been completed at Cigar Lake. It is important to note that the PDP is a planning tool, as it forms the basis for establishing a financial guarantee to support future decommissioning activities. The PDP also provides the structural outline of a subsequent Detailed Decommissioning Plan (DDP). Decommissioning of the facility requires the development of a DDP and submission of this document for review and approval from the CNSC and SMOE.

Cameco PDP Review Process

Cameco is required to update the PDP and PDCE every five years to account for changes at the facility, potential changes to the technical decommissioning options and other factors that may impact the cost estimate used to derive the financial guarantee for decommissioning of the facility. The revised PDP and PDCE are then submitted to the CNSC and SMOE for review and acceptance. Upon acceptance by the SMOE and CNSC staff, a formal CNSC Commission hearing is required for final approval of the PDP and PDCE by the CNSC. Once approved, Cameco adjusts the value of the financial guarantee to reflect the revised decommissioning cost estimate. The financial instruments are payable to the Government of Saskatchewan.

Basic Decommissioning Process

The planning for the decommissioning of Cigar Lake is an ongoing process. The broad scope of the proposed decommissioning process is described in the PDP. The process includes a description of the physical properties of the site, summary of previous environmental site characterization, a description of the areas and buildings to be decommissioned and the general structure and sequence of the main decommissioning work packages. At a high level, the decommissioning process requires the following activities:

- **Decommissioning Approvals:**
 - Development of DDP;
 - Application for required regulatory approvals;
- **Active Decommissioning:**
 - Ceasing production and transitioning the site to a safe state for decommissioning;
 - Underground placement of waste materials;
 - Allowing the mine to naturally flood;
 - Decommissioning of remaining surface infrastructure;
 - Contouring, grading and re-vegetation of the site;
- **Environmental Monitoring:**
 - Monitoring conducted during active decommissioning;
 - Monitoring conducted following active decommissioning to confirm that the site is in safe and stable condition; and
- **Transfer of the property to the Government of Saskatchewan’s Institutional Control Program (Institutional Control).**

The DDP would be developed with consideration of feedback provided by relevant stakeholders gathered through community outreach and stakeholder engagement.

Basic Decommissioning Strategy

The objective of the PDP is to have a plan in place to decommission and reclaim the Cigar Lake operation to an ecological and radiological condition that is as similar to the surrounding environment as is reasonably achievable. An additional objective is that the site will be suitable for traditional land use with no access restrictions following decommissioning and acceptance into Institutional Control.

The Cigar Lake PDP addresses decommissioning activities that will be required after cessation of mining activities. The PDP currently includes the following strategies for decommissioning of infrastructure at Cigar Lake:

- **Underground facilities:**
 - Underground hazardous substances (e.g., hydraulic oil, diesel fuel, gasoline, paint, engine coolant, etc.) will be moved to surface for use or transported off-site for recycling or disposal in accordance with applicable regulations;
 - Surface boreholes will be plugged at depth and grouted to surface;
 - Any remaining minewater treatment plant residue, mineralized core samples and miscellaneous contaminated solid waste will be placed underground;
 - The mine will be allowed to flood naturally;
 - The shafts will be filled with decommissioning waste and capped with an engineered concrete structure;
- **Surface building and facilities:**
 - Contaminated surface infrastructure will be dismantled and placed underground or transported off site to an approved facility;
 - Non-contaminated surface infrastructure will be disassembled and disposed of at the Cigar Lake landfill or transported off site to an approved facility;
- **Waste rock storage areas:**
 - Clean waste rock and overburden will be used as backfill, cover material and/or material for grading and contouring the site to promote drainage and re-vegetation;
 - Ore from test mining and potentially contaminated waste rock will be moved underground;
 - Potentially acid generating waste rock will be transported to the Orano Canada Inc. (Orano) McClean Lake Sue C pit;
- **Site access road and security gatehouse:**
 - The site access road will remain in place after decommissioning activities; and
 - The security gatehouse and all unnecessary site access road related materials (e.g., road signs) will be removed and transported to the Cigar Lake landfill.

Financial Guarantee

The above information was used to develop the PDCE and associated financial guarantee for Cigar Lake. The most recent PDCE for Cigar Lake is \$61.8 million, which represents an increase of \$12.6 million from the PDP and PDCE submitted in 2012. The most recent PDP and PDCE is awaiting final regulatory approval. Following approval of the PDP and PDCE, the financial guarantee will be adjusted to reflect the revised decommissioning cost estimate.