Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

CMD 26-H103.5

Date: 2026-08-04

Written Submission from Conexus Nuclear Inc.

Mémoire de Conexus Nuclear Inc.

In the matter of

À l'égard du

Bruce Power

Bruce Power

Application to amend the licensing basis for Bruce A and B nuclear generating stations to operate Units 7 and 8 pressure tubes beyond 300,000 effective full power hours

Demande visant à modifier le fondement d'autorisation des centrales nucléaires de Bruce-A et B afin d'exploiter les tubes de force des tranches 7 et 8 au-delà des 300 000 heures équivalentes pleine puissance

Hearing in Writing

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Senior Tribunal Officer, Commission Registry
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Subject: Bruce Power's application to amend the licensing basis for Bruce A and B nuclear generating stations to operate Units 7 and 8 pressure tubes beyond 300,000 effective full power hours.

Conexus Nuclear Inc. (Conexus) formally supports Bruce Power's application to amend the licensing basis for the Bruce A and B nuclear generating stations to operate Units 7 and 8 pressure tubes (PTs) up to a maximum of 310,000 effective full power hours (EFPH).

This endorsement is based on the key intersection of operational safety and grid reliability, and national energy strategy.

Operational Safety

The primary objective of this amendment is to provide Bruce Power with the necessary operational flexibility to schedule Major Component Replacement (MCR) outages for Units 7 and 8 without compromising grid reliability. By extending the pressure tube life to 310,000 EFPH, Bruce Power will ensure the safe and continuous production of clean electricity until these outages commence. To support this extended operation, Bruce Power continues progressing the following activities:

- In-service volumetric and dimensional (V&D) inspections and maintenance activities as indicated in the Fuel Channel Life Cycle Management Plan (FCLCMP) and the established outage scope of work.
- Monitoring of the enhanced oxidation phenomena in groups of pressure tubes in future V&D inspections as indicated in the FCLCMP to continue to gain known knowledge on the extent of surface condition.
- Continued monitoring of high deuterium ingress in the outlet rolled joint (RJ) regions in the upcoming B2771/B2681/B2881 outages through RJ scrape sampling at various clock positions and axial positions relative to the burnish mark.
- Continued monitoring and V&D inspections of flaws in the inlet and outlet regions of interest during the B2771, B2681 and B2881 outages.
- Monitoring of elevated Hydrogen equivalent ([H]eq) concentration localized inboard of the inlet burnish mark, which has been identified on removed pressure tubes. These elevated [H]eq concentration locations will continue to be monitored as part of future material surveillance and R&D activities that Conexus manages on behalf of its members

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- Revisiting the technical basis for exceeding Terminal Solid Solubility Hydrogen Dissolution (TSSd) by leveraging the R&D work recently completed through the crack initiation program on elevated [H]eq and recent industry efforts to extend material property validity limits through the Conexus Fuel Channel Life Management and R&D programs.
- Re-assessment of PT fitness-for-service assessments, probabilistic core assessments, fracture protection evaluations to an evaluation period of 310,000 EFPH.
- Continuation of the established Zr-2.5Nb pressure tube burst test program and validation of the cohesive-zone based fracture toughness model.

Bruce Power reactors have consistently operated and been maintained to the highest safety standards. The proposed amendment does not alter the fundamental safety case; rather, it extends the validated operational envelope, informed by rigorous aging management and fitness-for-service assessments.

Alignment with Ontario and Canadian Energy Strategies

Supporting this application aligns the Bruce Power site with two essential national initiatives: Ontario's "Energy for Generations" plan outlines the necessity of nuclear refurbishment and the deployment of new nuclear generation to meet future energy demands, and the Federal Government's Nuclear Energy Strategy emphasizes nuclear energy as a cornerstone of Canadian energy security and a vital component of a modern, low-emission power grid.

Ontario's electricity grid is already among the cleanest in the world, with over 90% of its electricity derived from low-emission sources, primarily nuclear and hydropower. Maintaining Bruce Power's output is essential to preserving this status while transitioning to a net-zero future.

Conexus Nuclear Inc. represents the collective voice of all CANDU reactor operators, both in Canada and internationally. Our mission is to achieve excellence through collaboration in CANDU technology, small modular reactors, and advanced nuclear technologies. Through Conexus, members invest approximately $75 million annually in joint research and development to enhance the safety, reliability, and environmental performance of CANDU stations. Key contributions relevant to this application include:

- **Aging Management:** Continuous monitoring and improvement of systems, structures, and components through innovation and new software technologies, ensuring that long-term operation remains within validated safety limits.
- **Fuel Channel Life Management:** Extensive research into pressure tube behaviour and longevity, and material integrity under prolonged operation.
- **Safety Analysis:** Rigorous probabilistic and deterministic safety assessments, including severe accident studies and external hazard analysis.

Furthermore, Conexus facilitates a robust network of peer groups and knowledge exchange forums among nuclear utilities. This collaborative framework ensures that best practices for long-term plant operation are shared globally, directly supporting the safety case for Bruce Power's extended operation.

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Conexus is confident that Bruce Power will maintain its exemplary safety record and that this amendment serves the best interests of public safety, environmental stewardship, and energy security. As such, Conexus supports Bruce Power NGS's application to amend the licensing basis for the Bruce A and B nuclear generating stations to operate Units 7 and 8 pressure tubes up to 310,000 EFPH.

Sincerely,

Rachna Clavero
President and CEO
Conexus Nuclear Inc.

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