Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire

UNPROTECTED / NON PROTÉGÉ
**ORIGINAL / ORIGINAL**
**CMD : 26-M22**
**File/Dossier # 6.02.04**
**Date signed / Signé le: 27-Jan-2026**

# STATUS REPORT ON POWER REACTORS

# RAPPORT D'ÉTAPE SUR LES CENTRALES NUCLÉAIRES

This document summarized the status of the Power Reactor Facilities as of January 12, 2026.

Ce rapport résume le rapport d'étape sur les centrales nucléaires en date du 12 janvier 2026.

Signed on / Signé le
**January 27, 2026**

Viktorov, Alexandre

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Canada

# 1. Power Reactors Status as of January 12, 2026

## 1.1 Bruce A and B

| Operational Status |
|---|
| Unit 1 is at Full Power |
| Unit 2 is at Full Power |
| Unit 3 is Shut Down for Major Component Replacement (MCR) |
| Unit 4 is Shut Down for Major Component Replacement (MCR) |
| Unit 5 is at Full Power |
| Unit 6 is at Full Power |
| Unit 7 is at Full Power |
| Unit 8 is at Full Power |
| **Licensing** |
| Power Reactor Operating Licence expires on September 30, 2028. |
| **Comments** |
| The Unit 3 MCR Project started in March 2023 and remains on schedule. Fuel load is scheduled for February 2026.<br>• Lower feeder installation is in progress.<br>• CNSC staff are performing verification activities to ensure that all pre-requisites required for the release of hold point #1 are completed.<br>The Unit 4 MCR Project started in February 2025 and remains on schedule.<br>• The moderator system drain and dry process is complete.<br>• Upper feeder removal is complete.<br>• Pressure tube sever and bellows removal are complete.<br>• Feeder nozzle preparation and end fitting removal are in progress.<br>The Unit 5 MCR Project is scheduled to begin in November 2026. |
| **Event Notifications and Updates** |
| None |
| **Actions from previous Commission meetings** |
| The Commission directed CNSC staff to track on-going work on hydrogen equivalent concentration (Heq) research and development (R&D) in a Record of Decision (DEC 23-H103) issued on October 13, 2023.<br>Since then, the progress update has been provided in Section 1.6 of this report. A stand-alone CNSC staff update on the status of the licensee R&D program for elevated Heq in the pressure tubes of reactors in extended operation will be presented during the week of March 23rd, 2026, as CMD 26-M10. |

## 1.2 Darlington

| Operational Status |
|---|
| Unit 1 is at Full Power |
| Unit 2 is at Full Power |
| Unit 3 is at Full Power |
| Unit 4 is Shut Down for Refurbishment |
| **Licensing** |
| Renewed Power Reactor Operating Licence 13.00/2045 came into effect on December 1, 2025. |
| **Comments** |
| Unit 4 refurbishment started in July 2023. The following reflects the most current information on the refurbishment activities:<br>• Boilers have been refilled<br>• ECI testing is in progress<br>• Regulatory Hold Point 1 (fuel load) was removed on August 28, 2025<br>• Regulatory Hold Point 2 (approval to remove GSS) is anticipated around January 19, 2026 |
| **Event Notifications and Updates** |
| OPG has provided its response to CNSC staff's request issued under Subsection 12(2) of the *General Nuclear Safety and Control Regulations* (GNSCR) regarding the results of a Type II inspection conducted to evaluate the full-scale emergency exercise "Unified Command 2025" (https://www.cnsc-ccsn.gc.ca/eng/acts-and-regulations/regulatory-action/letter-opg-2025-11-06/).<br><br>In its response, OPG committed to addressing all four elements of the 12(2) GNSCR request through a series of corrective and follow-up actions, including a comprehensive training gap analysis for emergency response personnel, a plan to validate the Phase 2 Emergency Mitigating Equipment (EME) guides, enhancements to the EME preventive maintenance program, and an assessment of the extent of condition at both Darlington and Pickering NGS. With respect to validation of the Phase 2 EME guides, OPG also committed to completing a formal human factors validation through a scheduled evaluated exercise in 2026 and to providing CNSC staff with related validation documentation and milestone updates.<br><br>CNSC staff are currently reviewing OPG's response to determine whether the 12(2) request has been addressed satisfactorily and the adequacy of corrective actions. |
| **Actions from previous Commission meetings** |
| None |

## 1.3 Pickering

| Operational Status |
|---|
| Unit 1 is shut down and transitioning to Safe Storage |
| Unit 2 is in a Safe Storage State |
| Unit 3 is in a Safe Storage State |
| Unit 4 is shut down and transitioning to Safe Storage |
| Unit 5 is at Full Power |
| Unit 6 is at Full Power |
| Unit 7 is at Full Power |
| Unit 8 is at Full Power |
| Licensing |
| Power Reactor Operating Licence expires on August 31, 2028. OPG is authorized to operate Units 5-8 until December 31, 2026, up to a maximum of 305,000 equivalent full power hours. |
| Comments |
| None |
| Event Notifications and Updates |
| None |
| Actions from previous Commission meetings |
| None |

### 1.4 Point Lepreau

| Operational Status |
|---|
| The Unit is at Full Power |
| Licensing |
| Power Reactor Operating Licence expires on June 30, 2032 |
| Comments |
| Point Lepreau returned to operation on December 14, 2025 following an outage which included repairs to a turbine/generator bearing. |
| Event Notifications and Updates |
| None |
| Actions from previous Commission meetings |
| None |

### 1.5 Darlington New Nuclear Project

| Construction Status – DNNP-1 |
|---|
| Major construction work in progress: |

- Excavation of the Reactor Building (RB) shaft, Condenser Cooling Water (CCW) Tunnel Boring Machine (TBM) launch shaft, and the Forebay shaft. The RB shaft excavation is forecasted to be completed by end of Q1 of 2026.
- Assembly of the Diaphragm Plate-Steel Composite (DP-SC) basemat is ongoing. Once completed this assembly will be lifted into RB shaft, which is forecasted for end of April 2026.
- Concrete mock-up activities are in progress and are forecasted for completion for Q1 of 2026.
- Installation of pile foundations for the Turbine Building is ongoing. On-going foundation work for Radwaste, Service and Control Buildings

Licensing

DNNP Power Reactor Construction Licence expires on March 31, 2035.

Status of OPG's progress toward each regulatory hold point:

- RHP-1: Installation of the RB Foundation (The current OPG target date is end of FEB 2026)

CNSC staff have agreed to the following changes to RHP1 commitments. CNSC staff reviewed these changes and confirmed they remain within the licensing basis for the DNNP.

- Commitment 5.2.10.2 "OPG is required to provide updated information regarding the Break Exclusion Zone for the BWRX-300" has been deferred to RHP-2 as three individual deliverables
    - 5.2.10.2A "Submission of Break Exclusion Zone Piping Material Test Report"
    - 5.2.10.2B "Submission of Break Exclusion Zone Volumetric Examination Procedure"
    - 5.2.10.2C "Submission of Break Exclusion Zone Defect Tolerance Analysis Report"

  CNSC staff have conditionally accepted the BEZ methodology and consider its implementation to be low risk. CNSC staff will continue to assess the BEZ implementation and any proposed deviations from the bounding conditions of the approved methodology would be addressed through established RHP-2 licensing regulatory commitments.
- Commitment 5.4.3.2 "OPG is required to submit information regarding the Diaphragm Plate Steel Concrete Composite (DP-SC) structural focused review team" has been clarified into three specific commitments for RHP-1:
    - "Submit documentation demonstrating the Diaphragm-Plate Steel-Concrete Composite structure (DP-SC) design methodology meets regulatory requirements and applicable Canadian codes and standards."
    - "Submit documentation demonstrating that ageing considerations have been included in the design of the deeply embedded DP-SC

structure, including inspectability, and maintenance considerations in accordance with regulatory requirements and industry best practices."

- "Submit documentation demonstrating that the Steel Concrete Containment Vessel (SCCV) will meet the acceptance criteria for bounding design basis accident events and the applicable bounding design extension conditions (DECs) have been considered in design, with sufficient margin remaining as per REGDOC-2.5.2 Section 8.6.2 and 8.6.12."

The combination of these changes increased the number of commitments associated with RHP-1 to 24 from the previously reported 23.

Status: 18 open, 6 closed, 24 total

- RHP-2: Installation of the Reactor Pressure Vessel (RPV) (OPG target date is Calendar Q3 2027)

Changes to RHP2 commitments: As described above, Commitments 5.2.10.2A, 5.2.10.2B, 5.2.10.2C were added to RHP-2 resulting in an increase of total commitments from 23 to 26.

Status: 26 open, 0 closed, 26 total

- RHP-3: Fuel-Out Commissioning (OPG target date is Calendar Q1 2028)

Changes to RHP3 commitments: None since last report

Status: 7 open, 0 closed, 7 total

| Comments |
| --- |
| None |
| Event Notifications and Updates |
| None |
| Actions from previous Commission meetings |
| None |

### 1.6 Other

**CNSC staff assessment of progress on hydrogen equivalent concentration (Heq) research and development (R&D) program commitments by Bruce Power and OPG**

In DEC 23-H103, the Commission directed *"CNSC staff to provide updates on Bruce Power's progress in its research and development (R&D) activities through the regular Status Report on Power Reactors, which is presented at each public Commission Meeting. CNSC staff shall develop a consolidated table to track and communicate the ongoing work to the Commission through the aforementioned Status Report on Power Reactors*".

Although the Commission's direction was to report specifically on Bruce Power's progress on its R&D activities, CNSC staff note that the Heq-related R&D program is conducted jointly between Bruce Power and OPG.

R&D plans from OPG and Bruce Power were presented to the Commission during a Meeting held on November 1-3, 2022 (CMD 22-M37.1 and in CMD 22-M37.3, respectively).

Since the last update to the Commission in CMD 25-M38, CNSC staff have completed their review of the latest R&D update. CNSC staff reported the results of this review to the Commission in a memo submitted in December, 2025, as well as a detailed update in CMD 26-M10, submitted in January, 2026.

Progress against the original completion dates provided in the R&D plans summarized in the December memo, in CMD 26-M10, and reproduced in the table below, continues to be acceptable. One R&D activity remains: Develop the final comprehensive Heq model, which is on track to be completed by Spring of 2026.

CNSC staff, OPG and Bruce Power will present a detailed update to the Commission during the Commission Meeting in March, 2026.

| R&D Activity | Planned Completion Date (from CMD 22-M37.1 and 22-M37.3) | Updated Status of R&D Activities |
|---|---|---|
| Update finite element software to simulate outlet rolled joint Heq evolution | Fall 2023 | Work has been completed |
| Develop finite element software to simulate inlet rolled joint Heq evolution | Fall 2023 | Work has been completed |
| Perform evaluation to assess the potential impact of the high levels of Heq on flaws at the inside surface of pressure tubes near the inlet region of interest | Fall 2023 | Work has been completed |
| Improve characterization of 'blip' and expected evolution of the inlet region of elevated Heq with continued operation | Spring 2024 | Work has been completed |
| Confirm the potential roles of hydrogen isotope ingress and redistribution on the development of the inlet regions of elevated Heq | Summer 2023 | Work has been completed |

| R&D Activity | Planned Completion Date (from CMD 22-M37.1 and 22-M37.3) | Updated Status of R&D Activities |
|---|---|---|
| Improve characterization of solubility behaviour of hydrogen isotopes in tubes with elevated Heq | Winter 2024 | Work has been completed |
| Enhance modeling of temperature distributions near the outlet rolled joint region of pressure tubes | Summer 2023 | Work has been completed |
| Define input parameters required for interim updates to the Heq model | Summer 2023 | Work has been completed |
| Develop interim Heq model | Fall 2024 | Work has been completed |
| Validation activities for the interim Heq model to support development of final comprehensive model | Fall 2025 | Work has been completed |
| Define input parameters required for the final comprehensive Heq model | Summer 2025 | Work has been completed |
| Define the relative importance of variables influential to Heq evolution | Fall 2025 | Work has been completed |
| Develop the final comprehensive Heq model | Spring 2026 | Progressing as planned |
| Complete hydride related crack initiation experiments for unirradiated material at Heq of 220 ppm or higher | Fall 2024 | Work has been completed |
| Complete fatigue crack initiation experiments for unirradiated material at Heq of 220 ppm or higher | Fall 2024 | Work has been completed |
| Complete crack initiation experiments for irradiated | Fall 2024 | Work has been completed |

| R&D Activity | Planned Completion Date (from CMD 22-M37.1 and 22-M37.3) | Updated Status of R&D Activities |
|---|---|---|
| material with elevated Heq without flaws present | | |
| Complete crack initiation and crack growth experiments for irradiated material with elevated Heq with flaws present | Fall 2024 | Work has been completed |