



## **Supplementary Information**

### **Written submission from Bruce Power Inc.**

In the Matter of

**Bruce Power Inc.  
Bruce Nuclear Generating Stations A and B**

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**Application to amend the power reactor  
operating licence for the Bruce Nuclear  
Generating Stations (NGS) A and B**

Hearing in writing based on written  
submissions

**April 2023**

## **Renseignements supplémentaires**

### **Mémoire de Bruce Power Inc.**

À l'égard de

**Bruce Power Inc.  
Centrales nucléaires de Bruce-A et B**

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**Demande visant à modifier son permis  
d'exploitation d'un réacteur de puissance pour  
les centrales nucléaires de Bruce-A et B**

Audience par écrit fondée sur des mémoires

**Avril 2023**

August 3, 2023

BP-CORR-00531-04396

Mr. Denis Saumure  
Commission Registrar  
Canadian Nuclear Safety Commission  
P.O. Box 1046  
280 Slater Street  
Ottawa, Ontario  
K1P 5S9

Dear Mr. Saumure:

Bruce A and B: Response to Request for  
Supplementary Information from the EAC, CMD 23-H103.10A

The purpose of this letter is to provide a response to the supplementary question from the Panel of the Commission and the External Advisory Committee (EAC) in Reference 1, which is related to Bruce Power's Application for a Licence Amendment on Pressure Tubes.

Attachment A provides a detailed response to Question #1 raised by the Panel of the Commission and EAC in CMD 23-H103.10A.

If you require further information or have any questions regarding this submission, please contact Jason Goldberg, Department Manager, Engineering, Nuclear Safety Analysis and Support, at (416) 666-1461, or [jason.goldberg@brucepower.com](mailto:jason.goldberg@brucepower.com).

Yours truly,



Digitally signed by  
Maury Burton  
Date: 2023.08.03  
11:26:32 -04'00'

Maury Burton  
Senior Director, Regulatory Affairs  
Bruce Power

cc: CNSC Bruce Site Office  
Ms. Monica Hornof, CNSC Ottawa  
Dr. Alexandre Viktorov, CNSC Ottawa  
[registry-greffe@cnsccsn.gc.ca](mailto:registry-greffe@cnsccsn.gc.ca)

Attach.

Reference:

1. Email, D. Saumure to M. Burton, "CMD 23-H103.10A - Supplementary Information from the EAC", July 24, 2023, e-Doc 7092154, BP-CORR-00531-04395.

**Attachment A**

**Response to Commission Panel Questions for Bruce Power, CMD 23-H103.10A**

**Attachment A:  
Response to Commission Panel Questions for Bruce Power, CMD 23-H103.10A**

**Commission Panel Questions for Bruce Power: Question 1**

*The EAC commented that the following two sentences do not appear to be consistent:*

*“The simulation results of the through-wall distribution of  $H_{eq}$  at the blip are not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness for-service evaluation.”*

*and*

*“This is based on the Finite Element Diffusion Analysis of High Hydrogen Level in Rolled Joint Region with Postulated Flaw (Reference A4) results which demonstrate that the high  $[H]_{eq}$  does not impact on the inner diameter of the tube where a flaw may occur.”*

*Explain how these two sentences are consistent with each other.*

**Bruce Power Response:**

The apparent inconsistency between the two sentences quoted in References A1 and A2 is clarified below with further context.

The statement in Enclosure 1 of Reference A1, was intended to reflect the preliminary nature of this work and that the results could not be directly applied in fitness for service evaluations of other pressure tubes. However, the results of this work demonstrated the capability to achieve predictions in reasonable agreement with the measured hydrogen equivalent concentration ( $[H]_{eq}$ ) and the inferred  $[H]_{eq}$  through wall thickness profile of pressure tube (PT) B6S13 at the time of removal. It was also shown that the presence of a blip would have no significant effect on the potential for crack initiation of a postulated flaw. Therefore, it was concluded that the blip would have no impact on existing PT fitness-for-service evaluations.

This conclusion was taken into consideration as part of the justification in the Bruce Power application for the amendment of the Power Reactor Operating Licence (PROL) in Reference A2, with the understanding that additional work would be required to further develop the methodology, as noted in Reference A1. In addition to the finite element diffusion work, Bruce Power continues to follow the requirements of CSA N285.4 and CSA N285.8 to demonstrate fitness-for-service in the inlet region of interest.

CNSC staff have since acknowledged the positive outcome of the initial diffusion analysis, but also communicated that the evaluation of all Bruce Power PT fitness-for-service assessments will be conducted using the risk-informed approach provided in Reference A3 until the end of 2025, while industry completes its elevated  $[H]_{eq}$  R&D program including further development of the finite element diffusion modelling approach.

**References:**

- A1. Letter, M. Burton to L. Sigouin, “Bruce A and B: Finite Element Diffusion Analysis of High Hydrogen Level in Rolled Joint Region with Postulated Flaw”, June 28, 2022, e-Doc 687260, BP-CORR-00531-02820.
- A2. Letter, M. Burton to D. Saumure, Commission Registrar, “Application for the Amendment of the Power Reactor Operating Licence”, October 11, 2022, e-Doc 6995600, BP-CORR-00531-01842.
  - CMD 23-H103.1, Written Submission from Bruce Power Inc, March 16, 2023.

- A3. Letter, M. Hornoff to M. Burton, "Bruce A and B: CNSC Risk Assessment of Elevated Heq at the Inlet Rolled Joint Burnish Mark of Pressure Tubes – New Action Item 2022-07-26737", BP-CORR-00531-03681, e-Doc 6936709, December 16, 2022.