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**CMD 23-H103Q.A**

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**Questions from Commission  
Panel Members**

**Questions des membres de  
la formation de la Commission**

In the Matter of

À l'égard de

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

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

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

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

Hearing in writing based on written  
submissions

Audience par écrit fondée sur des  
mémoires

**April 2023**

**Avril 2023**



<b>Question(s) from Commission Panel Member(s)</b>	<b>Question(s) des membre(s) de la formation de la Commission</b>
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## INTRODUCTION

The Panel of the Commission, in conducting a [Hearing in Writing](#)<sup>1</sup> to consider an application from Bruce Power Inc. (Bruce Power) for the amendment of its power reactor operating licence for the Bruce Nuclear Generating Stations (NGS) A and B, has reviewed the written submissions provided by CNSC staff in [Commission Member Document](#) (CMD) [CMD 23-H103](#), and Bruce Power in its application, CMD [23-H103.1](#). The Panel of the Commission also reviewed written submissions from 8 intervenors and the submission by the CNSC’s External Advisory Committee (EAC) on Pressure Tubes, CMD [23-H103.10](#) and CMD [23-H103.10A](#). The Panel of the Commission requires additional information with respect the questions set out below.

## QUESTIONS

The Panel’s questions for CNSC staff are set out in Table 1 and the Panel’s questions for Bruce Power are set out in Table 2.

**Table 1: CMD 23-H103Q.A Questions for CNSC staff**

#	Commission Panel Questions for CNSC Staff
1.	<p>The Commission requires a response to the following question raised by the EAC in CMD 23-H103.10A.</p> <p>Bruce Power’s Reference A4 in CMD 23-H103.1 (BP-CORR-00531-02820)<sup>2</sup>, states the following in the executive summary.</p> <p style="padding-left: 40px;">The “... focus of the evaluation was on the high levels of Heq at the blip and the potential impact on the hydrided region at the tip of a postulated axial blunt flaw. It was not intended to establish a comprehensive industry methodology for simulating the distribution of Heq in the entire rolled joint region. R&amp;D work to predict the levels of Heq in the entire rolled joint region is ongoing. The simulation results of the through-wall distribution of Heq at the blip are not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness-for-service evaluation.”</p> <p>As noted in Reference A4, the new methodology (is) “<i>not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness-for-service evaluation.</i>”</p>

<sup>1</sup> Revised Notice of Public Hearing 2023 H-103, March 7, 2023

<sup>2</sup> 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, BP-CORR-00531-02820.



#	Commission Panel Questions for CNSC Staff
	<p>In CMD 23-H103.1 Attachment A, Bruce Power submits the following:</p> <p>“Pressure Tube Fitness for Service Requirements for Pressure Tubes with High [H]eq in Regions of Interest near the Inlet and Outlet Rolled Joints</p> <p>For the Inlet Rolled Joint Region of Interest: Bruce Power shall follow the requirements of N285.4<sup>3</sup> and N285.8<sup>4</sup> to demonstrate fitness for service in the inlet region of interest. 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 that the high [H]eq does not impact on the inner diameter of the tube where a flaw may occur.”</p> <p>The EAC commented that the two sentences do not appear to be consistent:</p> <p>“The simulation results of the through-wall distribution of Heq at the blip are not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness-for-service evaluation.”</p> <p>and</p> <p>“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.”</p> <p>What is CNSC staff’s position regarding the applicability of the results of the Finite Element Diffusion Analysis of High Hydrogen Level in Rolled Joint Region with Postulated Flaw (Reference A4) for use in a fitness-for-service evaluation?</p>

**Table 2: CMD 23-H103Q.A Questions for Bruce Power**

#	Commission Panel Questions for Bruce Power
1.	<p>The Commission requires a response to the following question raised by the EAC in CMD 23-H103.10A.</p> <p>Bruce Power’s Reference A4 in CMD 23-H103.1 (BP-CORR-00531-02820)<sup>5</sup>, states the following in the executive summary.</p>

<sup>3</sup> CSA Group, CSA N285.4, *Periodic inspection of CANDU nuclear power plant components*.

<sup>4</sup> CSA Group, CSA N285.8, *Technical requirements for in-service evaluation of zirconium alloy pressure tubes in CANDU reactors*, 2015.

<sup>5</sup> 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, BP-CORR-00531-02820.



#	Commission Panel Questions for Bruce Power
	<p>The "... focus of the evaluation was on the high levels of Heq at the blip and the potential impact on the hydrided region at the tip of a postulated axial blunt flaw. It was not intended to establish a comprehensive industry methodology for simulating the distribution of Heq in the entire rolled joint region. R&amp;D work to predict the levels of Heq in the entire rolled joint region is ongoing. The simulation results of the through-wall distribution of Heq at the blip are not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness-for-service evaluation."</p> <p>As noted in Reference A4, the new methodology (is) "<i>not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness-for-service evaluation.</i>"</p> <p>In CMD 23-H103.1 Attachment A, Bruce Power submits the following:</p> <p style="padding-left: 40px;">"Pressure Tube Fitness for Service Requirements for Pressure Tubes with High [H]eq in Regions of Interest near the Inlet and Outlet Rolled Joints</p> <p style="padding-left: 40px;">For the Inlet Rolled Joint Region of Interest: Bruce Power shall follow the requirements of N285.4 and N285.8 to demonstrate fitness for service in the inlet region of interest. 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 that the high [H]eq does not impact on the inner diameter of the tube where a flaw may occur."</p> <p>The EAC commented that the following two sentences do not appear to be consistent:</p> <p>"The simulation results of the through-wall distribution of Heq at the blip are not intended to be used in an evaluation of other surveillance pressure tubes or in a fitness-for-service evaluation."</p> <p>and</p> <p>"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."</p> <p>Explain how these two sentences are consistent with each other.</p>



## REQUEST

CNSC staff and Bruce Power shall submit responses by way of supplementary CMD on or before 2023-08-04, if possible. Bruce Power and CNSC staff are expected to inform the Registry of any concerns respecting this deadline within five working days of receiving this CMDQ.

Name: Denis Saumure, Commission Registrar <i>On behalf of the Panel of the Commission</i>	Date: 2023-07-24
Signature:	