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Response to Commission Request for Information (CMD 23-H103Q)

Réponse à une demande d'information de la Commission (CMD 23-H103Q)

Bruce Power Inc.

Bruce Nuclear Generating Stations A and B

Bruce Power Inc.

Centrales nucléaires de Bruce-A et Bruce-B

Public Hearing in Writing

Audience publique par écrit

Submitted by:

CNSC Staff

Soumise par :

Le personnel de la CCSN

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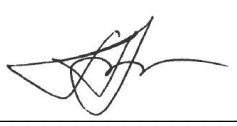

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Background

In this CMD, CNSC staff are providing responses in writing to questions from the Commission CMD 23-H103Q with respect to the hearing in writing 23-H103 concerning the request from Bruce Power to amend the Power Reactor Operating Licence for the Bruce Nuclear Generating Stations A and B to remove Licence Condition 15.3 and to consolidate all requirements for fitness for service applicable to pressure tubes under Licence Condition 6.1.

Questions from the Commission directed to CNSC staff, as well as staff responses, can be found in the next section.

Referenced documents in this CMD are available to the public upon request, subject to confidentiality considerations.

Staff Response

The Commission's questions have been reproduced below in the shaded boxes to provide suitable context for CNSC staff's responses.

#1	The Commission requires responses to the following questions raised by the EAC. EAC Question 1: Will there be an expectation somewhere to require that the degree of communication with Indigenous and other local community groups be enhanced until the level of engagement/communication is mutually agreed to?

Licence Condition G.5 requires Bruce Power to implement and maintain a public information and disclosure program (PIDP). The requirements and expectations with regards to communication and engagement are further articulated in CNSC REGDOC-3.2.1, *Public Information and Disclosure*. For this specific licence amendment application, and as verified through ongoing compliance verification activities, CNSC staff are satisfied with Bruce Power's communication and engagement with identified key target audiences as part of their PIDP. CNSC staff confirmed that Bruce Power communicated and engaged not only with stakeholders but also with Indigenous Nations and communities in the vicinity of the Bruce Nuclear Generating Station (NGS) A and B including the Saugeen Ojibway Nation, Historic Saugeen Métis and the Métis Nation of Ontario Region 7.

During a scheduled meeting with the Saugeen Ojibway Nation, in follow-up to their submission CMD 23-H103.3 for this licence amendment, CNSC staff enquired about whether there were specific concerns that the Nation had regarding Bruce Power's engagement and communications that they wished to discuss further with the CNSC. CNSC staff understood that the Saugeen Ojibway Nation did not wish for the CNSC to address any specific concerns with the licensee at this point in regard to this licence amendment or Bruce Power's engagement in general. CNSC staff are committed to continue engaging the Saugeen Ojibway Nation about elevated Heq in pressure tubes and other licensing-related topics.

CNSC staff also have ongoing dialogue with other Indigenous Nations and communities in the vicinity of Bruce NGS A and B. CNSC staff encourage Bruce Power to follow up with each and every identified Indigenous Nation and community in the vicinity of the Bruce NGS to confirm whether their communication and engagement processes and mechanisms for this particular licence amendment and other Bruce Power operations, projects and activities are satisfactory and appropriately tailored to the needs of the Indigenous Nation or community, or to identify what adjustments need to be made.

In addition, CNSC staff have regular meetings with each of the identified Indigenous Nations and communities as per signed Terms of Reference of Long-Term Engagement with each Nation.

CNSC staff will continue monitoring and following-up on each Indigenous Nation and community's satisfaction regarding both CNSC staff and Bruce Power's engagement as part of regular meetings and engagement activities as appropriate.

#2	It is noted that the Finite Element Diffusion analysis referred to in the June 2022 correspondence (Bruce Power Reference #4, BP-CORR-00531-02820) concludes that in inlet rolled joint regions, the high Heq concentrations are on the outside surface of the pressure tube and don't influence flaws on the inside surface. EAC Question 4: If the Finite Element Diffusion analysis is correct, what will be the effect on the validity of scrape samples on the inside surface of a pressure tube to measure the Heq level in the tube wall?

To confirm Bruce Power's assertions, as noted in the preamble to the Commission's question, the inlet rolled joint region Finite Element Diffusion analysis will need to model the formation of the outside surface blip, as well as the through-thickness evolution of the region of elevated Heq associated with the blip, factoring in the sensitivity of model predictions to expected ranges of influential parameters. The modelling will need to demonstrate that there will be no adverse interactions between the outside surface region of elevated Heq and inside surface flaws for end-of-life conditions of pressure tubes to confirm that existing methodologies can be used to verify fitness for service of pressure tubes with flaws.

Diffusion of hydrogen isotopes through the pressure tube wall thickness will need to be modelled for extended operation of pressure tubes. Inside surface scrape samples will provide ongoing confirmation that the near inside surface Heq measurements do not exceed model predictions for potential flaw locations, but they cannot be used to confirm that the model predicts appropriate Heq values at outside diameter surface elevated Heq "blips". In addition to scrape samples, model validation activities will require through thickness Heq measurements from removed pressure tubes to confirm the ability of the model to simulate Heq profiles near the inlet rolled joints.

#3	Canadian Nuclear Laboratories refers to extensive research and development (R&D) over the years, especially through the Fuel Channel Life Management COG Project. EAC Question 5. Is there a document somewhere that updates the status of all the planned work that was discussed / promised at previous hearings? What percentage of each of the proposed work activities has been completed?

Not all of the R&D conducted by industry has a direct impact on regulatory compliance and nuclear safety. CNSC staff tracking of specific R&D activities typically begins when a licensee proposes an update to a model or methodology that is used to assess safety margins within the licensing basis. Proposed updates are usually tracked under the CNSC's compliance verification process, although some may be tracked indirectly

through the CSA standards updating process. When tracked through the compliance verification process, a regulatory Action Item number is assigned through formal correspondence, which establishes closure criteria for successful adoption of the results. All correspondence with the licensee and CNSC staff reviews of documentation generated under the R&D program are recorded in the CNSC Regulatory Information Bank (RIB).

For long duration, multi-faceted projects, CNSC and licensee staff may choose to develop a protocol document to establish terms for correspondence and expected deliverables. Tracking of deliverables associated with these protocol documents is again handled through the establishment of Action Items through RIB. For example, a protocol was established for the Fuel Channel Life Management project, which addressed issues related to extending the operating life of pressure tubes beyond 210,000 EFPH including the integrity of tight-fitting spacers, deuterium ingress, fracture toughness testing, and development/enhancement of probabilistic assessment methodologies. The Commission was updated on the status of the Fuel Channel Life Management program activities through annual updates in the Regulatory Oversight Report (ROR) for Nuclear Generating Sites and licence renewal Commission Member Documents.

For the elevated rolled joint R&D activities, Action Item 2023-07-27173 was raised by CNSC staff to track Bruce Power's progress and submissions. Under this Action Item, CNSC staff are tracking Bruce Power's progress with respect to meeting the deliverables of the R&D plan [1]. CNSC staff will update the Commission on the status of the R&D plan through annual updates in the ROR, with more frequent updates if the need arises. The first progress update will be provided as part of the 2022 Regulatory Oversight Report (ROR) in December 2023.

#4	With respect to addressing the SON's concerns: EAC Question 7: How does the CNSC decide whether the information flow to the SON and other stakeholder groups has been adequate?

Aspects of the response above to Question #1 is of direct relevance to CNSC staff's response to Question #4. What follows is in addition to that.

To determine if licensees are providing an adequate flow of information, CNSC staff conduct annual reviews of the communications undertaken to ensure the work licensees are doing meets the requirements of REGDOC-3.2.1, *Public Information and Disclosure*. In review, CNSC staff aim to confirm that communications:

- are appropriate for the intended audiences;
- include relevant information (including operational, environmental and safety information about the licensed facility or activities); and
- are available and accessible broadly to Indigenous Nations and Communities, the public.

CNSC staff also evaluate whether licensees responded to media and public inquiries, and that they tracked, responded to and resolved inquiries as required.

Relative to Indigenous Nations and Communities:
CNSC staff have regular meetings with each of the identified Indigenous Nations and communities in accordance with signed Terms of Reference of Long-Term Engagement with each Nation. In these meetings, CNSC staff seek feedback from Indigenous Nations and communities on whether information flow from Bruce Power and CNSC staff is adequate. CNSC staff endeavours to incorporate this feedback in its future engagement activities with Indigenous Nations and communities in the vicinity of the Bruce NGS.

CNSC staff will continue monitoring and following-up on each Indigenous Nation and communities' satisfaction with regards to both CNSC staff and Bruce Power's engagement as part of regular meetings and engagement activities as appropriate.

Relative to the Public and Other Stakeholders:
Furthermore, CNSC staff provide information to the public and other stakeholders through frequent web site updates, social media and direct email messages to subscribers. Members of the public and media can submit inquiries to the CNSC via email or telephone, to which, CNSC staff respond promptly.

Conclusion

CNSC staff's conclusions and recommendations made in CMD 23-H103 remain unchanged.

References

1. Bruce Power Letter, M. Burton to A. Viktorov and M. Saumure, “Bruce A and B: Update to the Commission regarding Elevated Hydrogen Equivalent Concentrations – Action Item 2022-07-23135”, July 19, 2022, BP-CORR-00531-02909, e-Doc 7010601.

Glossary

For definitions of terms used in this document, see REGDOC-3.6, *Glossary of CNSC Terminology*, which includes terms and definitions used in the *Nuclear Safety and Control Act* and the regulations made under it, and in CNSC regulatory documents and other publications.

Additional terms and acronyms used in this CMD are listed below.

CMD	Commission Member Document
CNSC	Canadian Nuclear Safety Commission
EAC	External Advisory Committee
Heq	Hydrogen equivalent concentration
NGS	Nuclear generating station
NPP	Nuclear Power Plant
PIDP	Public information and disclosure program
R&D	Research and development
RIB	Regulatory Information Bank
ROR	Regulatory Oversight Report
SON	Saugeen Ojibway Nation