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**Written submission from
External Advisory Committee**

**Mémoire du
Comité consultatif externe**

Follow up from November 3, 2022
Commission Meeting

Suivi découlant de la réunion de la
Commission du 3 novembre 2022

**Responses to the questions from the
External Advisory Committee
regarding the update on the
discovery of elevated hydrogen
equivalent concentrations in the
pressure tubes of reactors in
extended operation**

**Réponses aux questions du Comité
consultatif externe au sujet de la
mise à jour sur la découverte de
concentrations élevées d'hydrogène
équivalent dans les tubes de force
des réacteurs en exploitation
prolongée**

Commission Meeting

Réunion de la Commission

January 25, 2023

Le 25 janvier 2023

Assessment of responses to EAC questions in CMD 22-M37.8

January 20, 2023; Rev 2

Responses are characterised as Satisfactory (S), Partially satisfactory but incomplete (P), and Needing Further Work (FW) (and No Comment provided (NC))

Question #	Bruce Power	CNSC Staff	OPG	Comment
1	S	NC	S	Good OPG/BP intent to harmonize Blip ROI. Is CNSC still an outlier on ROI definitions?
2	S	NC	S	Is there a reference for OPG FM report?
3	S	NC	S	Good
4	P	NC	P	The intent of the question was "would commission members know how to interpret vague terms"
5- 3A	S	NC	S	Does a probability of 0.5% (5x10E-3) at Bruce mean that there are expected to be ~10 or so tubes with flaws in the 2400 tubes in U3,4,5,7,8?
5-3F	P	NC	P	Were Stern tests carried out with high [H] patches in the ROI?
6-4D	S	NC	S	Good to see effort to improve
7-5	S	NC	S	Good to see interim model usable in 2023.
8	S	NC	S	Good
9	P	NC	P	The information about the known H profile was good. The question was more focused on the possible issue of there being more H in the Pressure Tube than was present during installation.
10(cnscQ1)	P	S	NC	BP/CNSC answers seem to be somewhat at odds with each other, but acceptable.
11(cnscQ2)	P	P	NC	We would be interested to hear more details of the analyses carried out to understand how time-dependent terms in the assessment are arrived at.
12(cnscQ3)	S	S	S	Good
13(cnscQ4)	NC	S	NC	Good
14 (cnscQ5)	S	S	S	Good
15 (cnscQ6)	FW	FW	FW	The utilities and CNSC cite different limits. CNSC notes 100ppm for FE material in all circumstances. However, Utilities note 100ppm for inlet and 140ppm for outlet, but it seems that this is only true if FE is at Inlet. Please clarify. BP doesn't answer the "how many?" question

EAC Follow-up Question

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There is some discussion in the Licensee submissions of how Heq can be "pumped" in directions that simple diffusion cannot. This mechanism relies on the fact that the values of TSSD (for dissolution) and TSSP (for precipitation) are slightly different when the hydrided Zr material is being heated up versus when it is being cooled down, as in when a reactor is shut down and restarted at a later time. If this mechanism is significant in producing high-Heq patches in the ROIs, you might expect the number of patches and their concentration to be correlated with the number and depth of cooldowns experienced by the units over their lifetime. Has there been any attempt to look for such a correlation?