



Date: 2021-08-20
File / dossier : 6.02.04
Edocs pdf : 6626937

**Supplementary written
submission from CNSC staff**

**Mémoire supplémentaire du
personnel de la CCSN**

**Hydrogen Equivalent Concentration
in Pressure Tubes for Nuclear
Power Plants**

**Concentration d'hydrogène
équivalent dans les tubes de force
pour les centrales nucléaires**

CNSC Letters of July 8 and 9, 2021
sent to Bruce Power

Lettres de la CCSN envoyées à Bruce
Power les 8 et 9 juillet 2021

Commission Meeting

Réunion de la Commission

September 3, 2021

Le 3 septembre 2021



Directorate of Power Reactor Regulation

July 8, 2021

e-Doc 6600766
File 4.01.02

Mr. Maury Burton
Chief Regulatory Officer
Bruce Power Inc.
P.O. Box 1540, B10-4W
177 Tie Road
Tiverton, Ontario N0G 2T0

Subject: Bruce A and B: CNSC Review of REGDOC-3.1.1 Event Report B-2021-98077 DR on Pressure Tube Surveillance Hydrogen Equivalent Concentration Measurements on Unit Shutdown for Major Component Replacement – New Action Item 2021-07-23406

Dear Mr. Burton:

Canadian Nuclear Safety Commission (CNSC) staff have reviewed Bruce Power's "CNSC Event Report" (B-2021-98077 DR) on "Pressure Tube Surveillance Hydrogen Equivalent Concentration Measurements on Unit Shutdown for Major Component Replacement" [1] which was submitted in accordance with REGDOC-3.1.1.

Based on the finding of an elevated hydrogen equivalent concentration, [Heq] measurement in the Unit 6 S13 surveillance pressure tube, it appears that Unit 6 operated beyond the Licensing Basis in Power Reactor Operating Licence PROL18.01/2028 [2] since Licence Condition 15.3 limits the operation of units containing pressure tubes with a [Heq] exceeding 120 parts per million (ppm).

Therefore, in accordance with PROL18.01/2028 [2] Licence Condition G.2, Bruce Power is requested to provide:

- a. The predicted Heq values for Unit 6 at the time of shutdown for MCR in January 2020, and
- b. The Heq measurements from the Unit 6 S13 surveillance pressure tube.

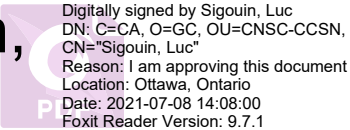
In addition, as this finding puts into question the predictive modelling for [Heq] in all Bruce A and B units, Bruce Power is requested to provide assurance that the operating Bruce A and B units (Units 1, 2, 4, 5, 7, and 8) continue to meet the Licensing Basis in PROL18.01/2028 [2] Licence Conditions 6.1 and 15.3. (Note: Unit 3 is currently in the planned A2131 outage and will be addressed separately).

A response is requested within 5 days of receipt of this letter. Action Item 2021-07-23406 has been opened to track this matter.

If you have any questions regarding this matter, please do not hesitate to contact Agnes Robert at agnes.robert@cnscccsn.gc.ca.

Sincerely,

**Sigouin,
Luc**



Digitally signed by Sigouin, Luc
DN: C=CA, O=GC, OU=CNSC-CCSN,
CN="Sigouin, Luc"
Reason: I am approving this document
Location: Ottawa, Ontario
Date: 2021-07-08 14:08:00
Foxit Reader Version: 9.7.1

Luc Sigouin
Regulatory Program Director
Bruce Regulatory Program Division

c.c.: V. Tavasoli, A. Robert, Bruce Site Office

References:

1. Bruce Power Email, J. Thompson to L. Sigouin, "REGDOC-3.1.1 B-2021-98077 DR", July 5, 2021, e-Doc [6600317](#).
2. CNSC Power Reactor Operating Licence PROL18.01/2028 "NUCLEAR POWER REACTOR OPERATING LICENCE BRUCE NUCLEAR GENERATING STATIONS A AND B", October 1, 2018, e-Doc [6113854](#).
3. CNSC Licence Conditions Handbook LCH-PR-18.01/2028-R002 Bruce Nuclear Generating Stations A and B Nuclear Power Reactor Operating Licence PROL18.01/2028, May 25, 2020, e-Doc [5864086](#).



Directorate of Power Reactor Regulation

July 9, 2021

e-Doc 6603183
File 4.01.02

Mr. Maury Burton
Chief Regulatory Officer
Bruce Power Inc.
P.O. Box 1540, B10-4W
177 Tie Road
Tiverton, Ontario N0G 2T0

Subject: Bruce A: CNSC Review of REGDOC-3.1.1 Event Report B-2021-93819 on A2131 Outage Scrape Campaign Hydrogen Equivalent Concentration Measurements – New Action Item 2021-07-23424

Dear Mr. Burton:

Canadian Nuclear Safety Commission (CNSC) staff have reviewed Bruce Power's "CNSC Event Report" (B-2021-93819) on "A2131 Outage Scrape Campaign Hydrogen Equivalent Concentration Measurements" [1] which was submitted in accordance with REGDOC-3.1.1.

Based on the finding of an elevated hydrogen equivalent concentration [Heq] measurement in the Unit 3 F16 scraped pressure tube, it appears that Unit 3 operated beyond the Licensing Basis in Power Reactor Operating Licence PROL18.01/2028 [2] since Licence Condition 15.3 limits the operation of units containing pressure tubes with a [Heq] exceeding 120 parts per million (ppm).

Therefore, in accordance with PROL18.01/2028 [2] Licence Condition G.2, Bruce Power is requested to provide:

- a. The predicted Heq values for Unit 3 at the time of shutdown for the A2131 planned outage, and
- b. The Heq measurements from the Unit 3 F16 pressure tube.

In addition, this finding shall be included in the assessment and response to request made in [3] to provide assurance that the operating Bruce A and B units (Units 1, 2, 4, 5, 7, and 8) continue to meet the Licensing Basis in PROL18.01/2028 [2] Licence Conditions 6.1 and 15.3.

Finally, the issue of restarting Unit 3 post-A2131 with respect to the requirements of PROL18.01/2028 [2], and specifically Licence Condition 15.3, will be addressed in separate correspondence.

A response is requested within 5 business days of receipt of this letter.

Action Item 2021-07-23424 has been opened to track this matter.

If you have any questions regarding this matter, please do not hesitate to contact Agnes Robert at agnes.robert@cnscccsn.gc.ca.

Sincerely,

Sigouin
, Luc

Digitally signed by Sigouin, Luc
DN: C=CA, O=GC,
OU=CNSC-CCSN, CN="Sigouin,
Luc"
Reason: I am approving this
document
Location: Ottawa, Ontario
Date: 2021-07-09 13:25:38
Foxit Reader Version: 9.7.1

Luc Sigouin
Regulatory Program Director
Bruce Regulatory Program Division

c.c.: V. Tavasoli, A. Robert, Bruce Site Office

References:

1. Bruce Power Email, J. Thompson to L. Sigouin, "REGDOC-3.1.1 B-2021-93819", July 8, 2021, e-Doc [6603256](#).
2. CNSC Power Reactor Operating Licence PROL18.01/2028 "NUCLEAR POWER REACTOR OPERATING LICENCE BRUCE NUCLEAR GENERATING STATIONS A AND B", October 1, 2018, e-Doc [6113854](#).
3. CNSC Letter, L. Sigouin to M. Burton, "Bruce A and B: CNSC Review of REGDOC-3.1.1 Event Report B-2021-98077 DR on Pressure Tube Surveillance Hydrogen Equivalent Concentration Measurements on Unit Shutdown for Major Component Replacement – New Action Item 2021-07-23406", July 8, 2021, e- Doc [6600766](#).