



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

## Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Bruce Power Inc.

Subject Bruce Nuclear Generating Station B –  
Request for Approval to Operate Beyond  
210,000 Equivalent Full Power Hours (EFPH)

Hearing Date September 2014

## **RECORD OF PROCEEDINGS**

Applicant: Bruce Power Inc.

Address/Location: Municipality of Kincardine, ON

Purpose: Approval to Operate Bruce Nuclear Generating Station B  
Beyond 210,000 Equivalent Full Power Hours (EFPH)

Application received: July 4, 2014

Date of hearing: September 10, 2014

Location: Canadian Nuclear Safety Commission (CNSC)  
280 Slater St., Ottawa, Ontario

Members present: M. Binder, Chair

Secretary: M. Leblanc

Recording Secretary: B. Gerestein

**Approval: Granted**

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## 1.0 INTRODUCTION

1. Bruce Power Inc. (Bruce Power) has submitted a request to the Canadian Nuclear Safety Commission<sup>1</sup> (CNSC), for approval to operate beyond 210,000 Equivalent Full Power Hours (EFPH) in accordance with condition 4.3 of the Bruce Nuclear Power Reactor Operating Licence, for its Bruce Power Nuclear Generating Station B (Bruce B) facility located in the Municipality of Kincardine, Ontario.
2. Bruce B has four CANDU reactors, each with 915 MWe (megawatts of electrical power), and all four units are fully operational. Bruce B is part of the Bruce Nuclear Power Development in the Municipality of Kincardine, in Bruce County, Ontario on the shore of Lake Huron.
3. Whereas it had always been the intention to consider Bruce Power operating its reactors above the 210,000 hours in a public forum, the recent short-term extension of the Bruce site operating licence for a 7-month period created a situation where Bruce Power had to request such authorization for Units 5 and 6 prior to the conduct of the public hearing for the request for renewal of the Bruce site operating licence planned for February and April 2015. Any requested change to the EFPH limit for all the Bruce B Units, including Units 5 and 6, will also be considered during these Commission hearings.

### Issue

4. In considering the request, the Commission was required to decide:
  - a) if Bruce Power is qualified to carry on the proposed activity; and
  - b) if, in carrying on that activity, Bruce Power would make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

### Panel

5. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to review the request. The Commission, in making its decision, considered submissions from Bruce Power (CMD 14-H115.1) and CNSC staff (CMD 14-H115).

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<sup>1</sup> The *Canadian Nuclear Safety Commission* is referred to as the “CNSC” when referring to the organization and its staff in general, and as the “Commission” when referring to the tribunal component.

## 2.0 DECISION

6. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*,

the Commission authorizes Bruce Power Inc. to operate the Bruce Nuclear Generating Station B Units 5 and 6 beyond 210,000 Equivalent Full Power Hours (EFPH), up to a maximum of 245,000 EFPH and subject to the decision of the Commission as part of the relicensing hearing of the Bruce Nuclear Generating Station located in the Municipality of Kincardine, Ontario. Consequently, the authorization is temporary and any authorization for a longer term period will be considered in the context of this public hearing scheduled to take place in February and April 2015.

## 3.0 ISSUES AND COMMISSION FINDINGS

7. The Bruce B LCH specifies that for operation beyond 210,000 EFPH, the licensee shall provide evidence to demonstrate that the predicted condition of pressure tubes continues to be sufficient to support safe operation. Operation beyond 210,000 EFPH can only be allowed by the Commission.
8. Bruce Power submitted a request for operating beyond 210,000 EFPH for Bruce B Unit 5, since the reactor is expected to reach the maximum EFPH in the fall of 2014. Bruce B unit 6 is predicted to reach the 210,000 EFPH limit in early spring 2015. The remaining units will not reach the maximum until the planned hearings for the renewal of the operating licence for the Bruce site and are therefore not at issue.
9. CNSC staff informed the Commission that Bruce Power is in compliance with CSA standard N285.8, *Technical requirements for in-service evaluation of zirconium alloy pressure tubes in CANDU reactors*, which provides detailed technical procedures and criteria for pressure tube fitness for service assessments.
10. Furthermore, CNSC staff informed the Commission of new methodologies and engineering models developed by Bruce Power to improve the understanding of degradation mechanisms.
11. Bruce Power indicated that the maximum level of hydrogen concentration currently in the Bruce reactors is 60 parts per million (ppm) hydrogen equivalent concentration, and that the research and development work to date accounts for conditions up to 124 ppm hydrogen equivalent concentration in the pressure tubes. The first reactor to likely reach this point (124 ppm, between 245,000 - 250,000 EFPH) will be Unit 5 in approximately 2020. Bruce Power added that the precise timing is dependent on the actual power and operating profile and will continue to be monitored. CNSC staff indicated that Bruce Power has demonstrated that operation up to 245,000 EFPH is acceptable for continued

safe operation of Bruce B.

12. CNSC staff informed the Commission that Bruce Power must implement and maintain programs to ensure fitness for service of pressure tubes. CNSC staff indicated that Bruce Power has developed more refined engineering methodologies and models to assess the fitness for service of the pressure tubes and has developed inspection and maintenance programs to ensure continued validation of the engineering assessments for the licence period.
13. CNSC staff informed the Commission that it would continue to conduct regulatory oversight on the activities of Bruce Power to ensure continued assurance of fitness for service of the pressure tubes.

#### 4.0 CONCLUSION

14. The Commission has considered the information and submissions from Bruce Power and CNSC staff and is satisfied that the request to increase, on a temporary basis and until further determined as part of the relicensing decision of the Bruce Power facility in 2015, permitted operation of Bruce B Units 5 and 6 from 210,000 to 245,000 EFPH will not adversely impact the safety of the Bruce B operations.
15. The Commission is of the view that, considering the temporary nature of the approval as stated above and its understanding of fitness for service of pressure tubes, Bruce Power has clearly demonstrated that these units will be safely operated beyond 210,000 EFPH. The Commission notes that CNSC staff will continue to monitor and inspect the facilities to ensure the continued safe operation of Bruce B.
16. As there are no licence amendments, there is no requirement to provide an opportunity to be heard. However, the Commission is of the view that the matter of operating beyond 210,000 EFPH should be further considered as part of the Bruce facility relicensing hearing, and that interested persons will have an opportunity to provide their views in the context of this public hearing planned for 2015.



Michael Binder  
President,  
Canadian Nuclear Safety Commission

SEP 16 2014

Date