DECISION OF THE INDEPENDENT PANEL - Application Nos. 01-1015 and 01-1035

Exemption Applications: Application Nos. 01-1015 and 01-1035 made by Bruce Power Inc. ("Bruce Power").

Panel Hearing the Applications: Glenna Carr and Carl Anderson.

Date Applications Heard: August 15, 2002.

Market Rules from which Exemptions are Requested: Baseline 5.0, Reference 16 of Appendix 4.2, Chapter 4 of the Market Rules.

Decision: The exemptions are granted on conditions.

Effective Date of the Exemptions: January 31, 2001, the date the exemption applications were received.

Conditions of the Exemptions: By the end of 2002, the IMO and Bruce Power shall jointly develop and agree upon an operating procedure that will include manual processes for controlling the reactor production and electrical output of the Bruce A and Bruce B units in over-generated island situations.

Term of the Exemptions: Lifetime of the equipment.

Reconsideration of the Exemptions: The exemptions should be reconsidered in the event the turbine-reactor control systems for the Bruce A and Bruce B units are replaced.

Transfer: Approval to transfer the exemptions may be given if the following criteria are met:

- The transfer meets applicable terms and conditions set forth in the exemptions and the transfer would not affect the ability of the proposed transferee to comply with all of the terms and conditions of the exemptions;
- The proposed transferee is a market participant or undertakes in writing to the IMO to apply for authorization as a market participant; and
- The transfer of the exemptions will not materially impact the timely implementation of the plan to become compliant with the exempted obligation.

Reasons of the Panel:

These exemptions were heard together with two related OPG exemption applications (Exemption Application Nos. 01-1023 and 01-1057). In rendering our decision, we have considered Bruce Power's Exemption Applications, IMO Staff's Recommendations, the applicable Market Rules and the Exemption Application and Assessment Procedure.

Bruce Power is a generator. It seeks an exemption for its Bruce A and Bruce B nuclear units from the requirements of Reference 16, Appendix 4.2, Chapter 4 of the Market Rules, which requires generation facilities to automatically disable control systems that inhibit governor response during frequency deviations greater than 100 mHz (0.1 Hz) above the normal system frequency of 60 Hz.

At present, Bruce Power's Bruce A and Bruce B nuclear units do not comply with the requirements of Reference 16 of Appendix 4.2. During "over-generated island" conditions, the units' control systems inhibit governor response during frequency deviations greater than 100 mHz above the normal system frequency of 60 Hz. An over-generated island condition occurs when an electrical disturbance causes the power system to separate into sections (called electrical islands) and the generation contained in a section exceeds the load to be supplied to the section.

The reason the units do not comply is that they operate under the "reactor leading" mode (turbine power adjusted to follow a reactor power change). The reactor-leading mode automatically matches the electrical output of the turbine/generator to the power being produced by the reactor. In an over-generated island condition, the generators will initially respond to the governor signal to reduce electrical output in order to reduce the frequency of the electrical island. However, the boiler pressure control system will eventually override the governor in order to restore the electrical output of the turbine/generator so that it matches the power being produced by the reactor. This drives up the frequency of the electrical island.

Bruce Power says that in order to comply fully with Reference 16 of Appendix 4.2, it would have to convert the units from reactor leading mode to a different mode of operation. Bruce Power says conversion to a different mode would result in a small reduction in plant output and a small variation in reactor power. Bruce Power says these variations would result in less stable reactor operation and could degrade system reliability.

Bruce Power says that the Bruce A and Bruce B units have operated in this condition for approximately 20 years and that over-generated island conditions can be addressed through manual power reductions at the direction of the IMO. Bruce Power says that granting the exemptions would therefore not threaten the ability of the IMO to direct operations or maintain the reliability of the IMO-controlled grid.

IMO Staff recommends that the exemptions be granted on the condition that the IMO and Bruce Power develop and agree upon a procedure for manually controlling reactor production and electrical output of the Bruce A and Bruce B units in over-generated

island conditions. In support of its recommendation, IMO Staff states that in order to convert the mode of operations from reactor-leading to turbine-leading, an extensive nuclear safety re-analysis would be required to ensure that there would be no impact on station nuclear safety and to confirm the adequacy of trip coverage. Also, any change would require the approval of the Canadian Nuclear Safety Commission whose approval is not guaranteed. Further, if it could be demonstrated that the units could safely convert to turbine-leading mode and the approval of the CNSC could be obtained, the electrical output of each generator would need to be de-rated by 2% to 5% to address stability issues. Loss of revenue could approximate $11 million per year for Bruce A and $22 million per year for Bruce B, and the de-rating of these units would reduce the IMO's capability to meet its customer load and operating reserve requirements.

IMO Staff states that granting the exemptions would have an acceptable impact on the reliable operation of the IMO-controlled grid because the exemptions would only apply to over-generated island conditions under which frequency regulation is usually available via governor-controlled thermal and hydraulic generating units. Also, if over-frequency situations were to persist, the electrical output of the Bruce A and Bruce B units could, under the direction of the IMO pursuant to a jointly developed operating procedure, be adjusted to return the frequency to an acceptable level for subsequent system restoration.

These exemptions are granted on the terms stated herein. In reaching our decision, we have considered the criteria set out in section 1.5.2 of the Exemption Application and Assessment Procedure and we are satisfied that granting the exemptions will not materially impact the IMO's ability to direct the operations and maintain the reliability of the IMO-controlled grid, and that in the circumstances it would not be reasonable to require Bruce Power to incur the cost and delay of becoming compliant. In addition to the reasons for granting these exemptions given by IMO Staff in its written Recommendations, we are comforted by IMO Staff's comments that over-generated island conditions are rare, the last occurrences being in 1985 and 1971. IMO Staff also noted that although a manual procedure for controlling reactor production and electrical output during over-generated island situations has yet to be formalized in an agreement between the IMO and Bruce Power, such an informal procedure has long been in place and been adhered to. As such, IMO Staff does not anticipate any difficulty agreeing on an appropriate procedure with Bruce Power and implementing the procedure.

Glenna Carr Sept 5/02
Glenna Carr Date

Carl Anderson Sept. 5/02
Carl Anderson Date