



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Decision

In the Matter of

Applicant

Ontario Power Generation Inc.

Subject

**Request to Revise the Integrated
Implementation Plan for the Darlington Nuclear
Generating Station**

**Date of
Decision**

July 18, 2019

RECORD OF DECISION

Applicant: Ontario Power Generation Inc.

Address/Location: 700 University Avenue, Toronto, Ontario, M5G 1X6

Purpose: Request to Revise the Integrated Implementation Plan for the Darlington Nuclear Generating Station

Application received: February 28, 2019

Date of decision: July 18, 2019

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

Panel of Commission: R. Velshi, President

Change in licensing basis: Approved

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1.0 INTRODUCTION

1. Ontario Power Generation Inc. (OPG) has submitted a request to the Canadian Nuclear Safety Commission¹ (CNSC) for the approval to revise the Darlington Nuclear Generating Station (Darlington NGS) Integrated Implementation Plan (IIP). Specifically, OPG applied for a revision to the original approach for five IIP items (IIP-OI 023, IIP-OI 002, IIP-OI 024, IIP-EA 009, IIP-OI 015), as well as changes to the completion dates of three IIP items (IIP-CC 023, IIP-CC 026 and IIP-CC 034). A revision to the IIP represents a change in the licensing basis for the Darlington NGS and requires Commission approval.
2. OPG's licence for the Darlington NGS, PROL 13.00/2025, expires on November 30, 2025. The Darlington NGS consists of four CANDU pressurized heavy water reactors, a tritium removal facility and associated equipment for the purpose of electricity generation. The site is also home to the Darlington Waste Management Facility, which is licensed under a separate Class IB Waste Facility Operating Licence. The Darlington NGS is located in the municipality of Clarington, Ontario.
3. OPG carried out an environmental assessment (EA) in respect of the refurbishment and continued operation of the Darlington NGS under the *Canadian Environmental Assessment Act*.² Following a public hearing in 2012, the Commission found that the EA Screening Report was complete.³
4. OPG also conducted an integrated safety review (ISR) prior to the 2015 Darlington NGS licence renewal hearing.⁴ OPG conducted the ISR to determine the extent to which the Darlington NGS conformed to modern standards and practices. The ISR consisted of an assessment of its design; the condition of its systems, structures, and components (SSCs); and of its performance. The results of the ISR resulted in modifications to enhance the safety of the Darlington NGS, and the results of both the EA and ISR were incorporated into the IIP for the Darlington NGS. The Commission included the IIP, as detailed in CMD 15-H8.1,⁵ in the Darlington NGS licensing basis during the 2015 licence renewal hearing.

¹ 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 S.C. 1997, c. 37

³ CNSC Record of Proceedings, Including Reasons for Decision – Ontario Power Generation Inc., *Environmental Assessment Screening Regarding the Proposal to Refurbish and Continue to Operate the Darlington Nuclear Generating Station in the Municipality of Clarington, Ontario*, 3 – 6 December 2012 (public hearing dates).

⁴ CNSC Record of Proceedings, Including Reasons for Decision – Ontario Power Generation Inc., "Application to Renew the Nuclear Power Reactor Operating Licence for the Darlington Nuclear Generating Station," Issued on March 2, 2016.

⁵ CMD 15-H8.1 "Application to renew the Power Reactor Operating Licence for the Darlington Nuclear Generating Station," Ontario Power Generation Inc., August 19, 2015.

Issue

5. Before making its decision, the Commission considered whether an EA under CEAA 2012 was required.

Hearing

6. Pursuant to section 22 of the NSCA, I established myself to preside as a Panel of one Commission Member to hear the request. The Commission, in conducting a public hearing based on written materials, considered written submissions from OPG (CMD 19-H104.1) and CNSC staff (CMD 19-H104). The Commission invited written interventions from members of the public to comment on OPG's request, but none were received.

2.0 DECISION

7. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Decision*, the Commission concludes that the revised Darlington NGS IIP proposed by OPG continues to meet the safety improvement objectives of the ISR and the previously-approved IIP, and remains within the safety case approved by the Commission. Therefore,

the Commission approves the changes in the Integrated Implementation Plan for the Nuclear Power Reactor Operating Licence, PROL 13.01/2015, issued to Ontario Power Generation Inc. for its Darlington Nuclear Generating Station located in the municipality of Clarington, Ontario. The licence remains valid until November 30, 2025.

8. With this decision, the Commission approves the revisions to the following Darlington NGS IIP items, as detailed in CMDs 19-H104.1 and 19-H104: IIP-EA 009, IIP-OI 015, IIP-OI 002, IIP-OI 023, IIP-OI 024, IIP-CC 023, IIP-CC 026 and IIP-CC 034.
9. The Commission is satisfied that these changes to the Darlington NGS IIP are in conformance with the 2012 EA carried out in respect of the Darlington NGS refurbishment and continued operations.
10. The Commission directs CNSC staff to update the Darlington NGS Licence Conditions Handbook (LCH) to reflect the Commission's decision in this matter.

3.0 ENVIRONMENTAL ASSESSMENT

11. In coming to its decision, the Commission was first required to determine whether an Environmental Assessment (EA) under the *Canadian Environmental Assessment Act, 2012*⁶ (CEAA 2012), was required.
12. In its application, OPG submitted a request to revise eight Darlington NGS IIP items, representing a change in licensing basis for the facility. The Commission notes that a change in licensing basis in respect of this revision to IIP items does not constitute a designated project under CEAA 2012.
13. In its written submission, CNSC staff informed the Commission that its review of OPG's proposed revised approaches for the resolution of the eight IIP items continued to be within the scope of the 2012 EA that was carried out for the refurbishment and continued operation of the Darlington NGS.
14. CNSC staff submitted that, given the nature of the proposed changes to the Darlington NGS IIP, the changes will not cause any adverse impacts to the environment. The Commission notes that the conclusion reached after the 2015 Darlington NGS licence renewal hearing⁷, that OPG is qualified to carry on the activity that the licence authorizes to carry on, and will adequately provide for the protection of the environment and health and safety, is not negatively impacted by the proposed changes to the IIP.
15. Based on the information examined by the Commission in this matter, the Commission is satisfied that OPG's application for a change to the Darlington NGS licensing basis does not propose any new activities nor causes any adverse impacts to the environment and that an environmental assessment under CEAA 2012 was not required in this matter. Further, the Commission is satisfied that OPG has made, and will continue to make, adequate provision for the protection of the environment in relation to the licensed activities throughout the licence period.

4.0 ISSUES AND COMMISSION FINDINGS

16. The Commission notes that licence condition 15.3 of PROL 13.01/2015 requires that "*The licensee shall implement the Integrated Implementation Plan*" and licence condition G.1 stipulates that the licensee shall conduct licensed activities in accordance with the licensing basis for the facility.⁸ Since the IIP forms a part of the Darlington NGS licensing basis, the Commission must approve, in writing, any changes to the IIP. In

⁶ S.C. 2012, c. 19

⁷ Record of Proceedings, Including Reasons for Decision, *Application to Renew the Nuclear Power Reactor Operating Licence for the Darlington Nuclear Generating Station*, Issued March 2016.

⁸ The licensing basis is defined as (i) *the regulatory requirements set out in the applicable laws and regulations; (ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence; and (iii) the safety and control measures described in the licence application and the documents needed to support that licence application; unless otherwise approved in writing by the Canadian Nuclear Safety Commission (CNSC, hereinafter "the Commission")*.

making its decision in this matter, the Commission considered the acceptability of OPG's proposed alternate means for resolution for eight IIP items in respect of their impact on safety of the Darlington NGS and meeting the previously-established safety improvement objectives for the facility.

IIP-EA 009 and IIP-OI 015

17. The Commission reviewed the proposed changes to IIP-EA 009, which considers the provision of an alternate and independent source of emergency water supply to the heat transport system and IIP-OI 015, which considers the provision of a new supply of fire protection water separate from the emergency water supply. OPG submitted that its analysis had shown that the proposed design changes for the resolution of these IIP items were more robust and reliable than the original designs, and that the alternate means for resolution of these IIP items would meet the intent of the IIP and reduce overall facility risk.
18. In its written materials, CNSC staff informed the Commission that its review showed that OPG's alternate means for the resolution of IIP-EA 009 and IIP-OI 015 met the safety improvement objectives of the IIP in respect of the provision of a requisite source of emergency water. CNS staff also submitted that, in regard to IIP-OI 015, an independent third-party review of OPG's proposed alternate means for resolution confirmed that it had met the intent of the requirements of CSA N293-07, *Fire protection for CANDU nuclear power plants*.⁹

IIP-OI 002

19. The Commission reviewed the proposed alternate means for resolution of IIP-OI 002, which considers outdoor transformer protection at the Darlington NGS. OPG submitted that the results of its review and analysis of the existing sprinkler system showed that sprinkler coverage in the facility would be extended, reducing the risk of fire and achieving direct compliance with CSA N293-07. OPG further submitted that, for this reason, the alternative compliance solution as documented in the IIP was no longer required.
20. CNSC submitted that it had reviewed OPG's assessment in respect of IIP-OI 002 and was satisfied that OPG had demonstrated that the capacity of the existing sprinkler system would exceed the capacity requirements of the applicable codes and standards, and was satisfied that the sprinkler system was capable of stopping the spread of fires. CNSC staff further submitted that OPG's proposed solution to extend the sprinkler system coverage would allow for direct compliance with CSA N293-07, rather than a deviation from CSA N293-07, which had previously been accepted by the CNSC.

⁹ CSA N293-07, *Fire protection for CANDU nuclear power plants*, CSA Group, 2007.

IIP-OI 023

21. The Commission reviewed OPG's proposed removal of item IIP-OI 023 from the Darlington NGS IIP. This item deals with the protection of the fire and smoke detection system cabling located above the Unit 2 instrument air compressors. OPG submitted that, the ISR had incorrectly identified a gap concerning the specifications of CSA N293-07, whereas, in fact, no such gap existed. OPG further submitted that, upon performing additional analysis, OPG had confirmed that the Darlington NGS met the specifications of CSA N293-07 and was also in compliance with the *National Building Code of Canada* 2010¹⁰ (NBCC 2010) in respect of this issue.
22. CNSC staff reported that OPG had sought clarification on the relevant clauses of CSA N293-07 for IIP-OI 023 with the CSA Technical Committee on Fire Protection for Nuclear Power Plants (CSA Technical Committee). CNSC staff further reported that its review of the information submitted by OPG had resulted in the CNSC's acceptance of OPG's and the CSA Technical Committee's interpretation of CSA N293-07. Specifically, CNSC staff informed the Commission that the clauses and associated criteria in question did not apply to this IIP item and that there would be no negative impacts on safety from the removal of this item from the IIP. CNSC staff added that it was CNSC staff's view that Darlington NGS was in compliance with the applicable fire protection codes and standards related to this item.

IIP-OI 024

23. The Commission reviewed the proposed alternate means for completion of IIP-OI 024, which considers the replacement of penetration seal fire-stopping materials that are not listed in fire protection standards. OPG submitted that it had reviewed the penetration seals at the Darlington NGS, with laboratory tests and third-party reviews confirming that the fire-stopping materials had met the relevant specifications of the NBCC 2010 and CSA N293-07. As a result of this review, OPG reported that the replacement of unlisted materials was not necessary as the current fire-stopping materials met the intent of the relevant codes and standard. OPG also submitted that, as part of the alternate means of completion of IIP-OI 024, it would implement CNSC staff's recommendation to update procedures for the Darlington NGS to document the newly-established combustible-free zones.
24. CNSC staff reported that it had reviewed OPG's assessment in regard to IIP-OI 024, as well as the test results in respect of the unlisted materials, with the tests having been carried out by the Underwriters Laboratories of Canada. CNSC staff submitted that it concurred with the findings that OPG's fire penetration seals at the Darlington NGS met the intent of the CSA N293-07 and the NBCC 2010, and that the replacement of the unlisted materials in those seals was not required. CNSC staff reported that this alternate means for completion of IIP-OI 024 met the original intent of the IIP and that it would verify OPG's documentation of combustible-free zones through compliance verification

¹⁰ *National Building Code of Canada 2010*, National Research Council, 2010.

activities.

IIP-CC 023, IIP-CC 026 and IIP-CC 034

25. The Commission reviewed the requested changes to completion dates for items IIP-CC 023, IIP-CC 026, and IIP-CC 034, which consider the testing and replacement of fire dampers at the Darlington NGS. OPG submitted that it would need additional time to complete the testing and replacement of these fire dampers, in order to allow OPG to order parts and assess nuclear safety aspects before starting the tests. OPG submitted that all required fire damper testing, originally committed for 2019, were now committed to be tested by 2024 and that an engineering report demonstrated that postponed testing of the fire dampers beyond the refurbishment of Unit 2 would not result in safety risks during the return to service of Unit 2 since the fire dampers were in good condition.
26. CNSC staff informed the Commission it had assessed OPG's inspection results and technical evaluations in respect of the fire dampers, and was satisfied that the extended completion dates for items IIP-CC 023, IIP-CC 026 and IIP-CC034 would not have adverse impacts on the safety of the Darlington NGS.

Assessment of proposed revisions to the Darlington NGS IIP items

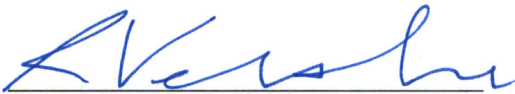
27. Based on its assessment of the information provided on the record by OPG and CNSC, the Commission is satisfied that the proposed revisions to the eight Darlington NGS IIP items will not adversely impact safety, continue to meet the objectives set out by the ISR and the IIP and remain within the safety case approved by the Commission for the Darlington NGS. The Commission is also satisfied that the revised IIP remains within the safety case that was approved by the Commission.

5.0 CONCLUSIONS

28. The Commission has considered the request submitted by OPG to revise eight IIP items for the Darlington NGS, as well as the information submitted by OPG and CNSC staff as set out in the material available for reference on the record.
29. The Commission concludes that the revised IIP proposed by OPG continues to meet the safety improvement objectives of the ISR and the IIP, and remains within the safety case approved by the Commission. Therefore, the Commission approves the change in licensing basis for PROL 13.01/2015 issued to OPG for its Darlington NGS, located in the municipality of Clarington, Ontario. OPG's licence remains valid until November 30, 2025.
30. The Commission concludes that an EA under CEAA 2012 was not required for this licensing basis change request. The Commission is satisfied that the proposed changes to

the IIP items will not cause any adverse impacts to the environment and that the changes are in conformance with the 2012 EA carried out by OPG. For these reasons, the Commission is satisfied that a CNSC environmental protection review under the NSCA and its regulations was not required for this matter. The Commission notes that the NSCA and its regulations provide for the protection of the environment and the health and safety of persons, and is satisfied that OPG will continue to adequately provide these protections.

31. With this decision, the Commission approves the revision of the Darlington NGS IIP as described in CMDs 19-H104.1 and 19-H104. Specifically, the Commission approves the alternate means for resolution proposed by OPG for IIP items IIP-EA 009, IIP-OI 015, IIP-OI 002, IIP-OI 024, and the removal of IIP-OI 023 from the IIP. The Commission also approves the revised timelines for completion of IIP items IIP-CC 023, IIP-CC 026 and IIP-CC 034.
32. The Commission directs CNSC staff to amend the LCH to reflect the approved changes to the Darlington NGS licensing basis and IIP.


Rumina Velshi
President
Canadian Nuclear Safety Commission

July 18, 2019
Date