Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Record of Decision

DEC 24-H102

In the Matter of

Applicant	Ontario Power Generation Inc.
Subject	Application to Amend the Pickering Waste Management Facility (PWMF) Licensing Basis to Process and Store a Maximum of 100 Dry Storage Containers Containing a Minimum of 6-year Cooled Fuel at the PWMF
Summary Record of Decision Date	August 3, 2024
Detailed Record of Decision Date	September 26, 2024

e-Doc 7290468 (Word)
e-Doc 7371397 (PDF)

RECORD OF DECISION – DEC 24-H102

Applicant:	Ontario Power Generation Inc.
Address/Location:	700 University Avenue, Toronto, Ontario, M5G 1X6
Purpose:	Application to Amend the Pickering Waste Management Facility (PWMF) Licensing Basis to Process and Store a Maximum of 100 Dry Storage Containers Containing a Minimum of 6-year Cooled Fuel at the PWMF
Application received:	June 20, 2023
Hearing:	*Notice of Hearing in Writing and Participant Funding* published on November 21, 2023 *Revised Notice of Hearing in Writing and Participant Funding* published on March 20, 2024
Date of decision:	August 3, 2024
Panel of Commission:	Dr. T. Berube, Acting President Dr. V. Remenda

Licensing Basis: Amended

e-Doc 7290468 (Word)
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1.0 INTRODUCTION

1. On June 20, 2023, Ontario Power Generation Inc. (OPG) submitted an application to the Canadian Nuclear Safety Commission[1] (CNSC), under subsection 24(2) of the *Nuclear Safety and Control Act*[2] (NSCA), for an amendment to the licensing basis[3] for the Pickering Waste Management Facility (PWMF). The PWMF is a Class I nuclear facility, located in the city of Pickering, Ontario, and within the traditional lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1877-88), the Williams Treaties (1923), and the Williams Treaties Settlement Agreement (2018). The current licence, WFOL-W4-350.00/2028, expires on August 31, 2028. On August 3, 2024, the Commission amended the licensing basis for the PWMF.[4] This *Record of Decision* provides the detailed reasons for that decision.

2. The current licensing basis authorizes OPG to process and store, at the PWMF, dry storage containers containing used CANDU[5] fuel that has been cooled in wet storage at the Pickering Nuclear Generating Station (NGS) for at least 10 years. OPG is seeking authorization to process and store, at the PWMF, up to 100 dry storage containers containing used fuel that has been cooled in wet storage at the Pickering NGS for a minimum of 6 years. The processing and storage of dry storage containers containing used fuel that has been cooled for less than 10 years is outside of the current licensing basis for the PWMF and requires Commission authorization.

Issues

3. Licence condition G.1, *Licensing Basis for Licensed Activities*, of WFOL-W4-350.00/2028 requires that:

> *The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:*
>
> *a) the regulatory requirements set out in the applicable laws and regulations;*
> *b) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence;*
> *c) 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 (hereinafter "the Commission").*

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[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. 9.
[3] The licensing basis is a set of requirements and documents for a regulated facility or activity comprising:
- the regulatory requirements set out in the applicable laws and regulations
- the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence
- the safety and control measures described in the licence application and the documents needed to support that licence application

[4] The *Summary Record of Decision* is available on the CNSC website.
[5] All nuclear power reactors in Canada are CANDU (Canadian Deuterium-Uranium) reactors. CANDU reactors are pressurized heavy water reactors that use natural uranium as fuel and heavy water as a coolant and moderator.

The licensing basis is established by the Commission at the time the licence is issued. As described in the licence conditions handbook for the PWMF, *Pickering Waste Management Facility Licence Conditions Handbook: LCH-W4-350.00/2028*:

> *…operation during the licence period that is not in accordance with the licensing basis is only allowed based on the written approval of the Commission. Similarly, only the Commission can change the licensing basis during the licence period; and this would also be expected to be recorded in writing.*
> […]
>
> *In the event that the Commission grants approval to operate in a manner that is not in accordance with the existing licensing basis, this would effectively revise the licensing basis for the facility. The appropriate changes would be reflected in the [compliance verification criteria] of the relevant [licence condition].*[6]

4. This application does not call for a licensing decision that is specifically contemplated under section 24 of the NSCA, as a change to the licensing basis does not necessarily amend the terms of a licence, and would not in this case. What is requested would not change the licensed activities authorized in the current licence. The Commission has considered:

   i) whether and what requirements the *Impact Assessment Act*[7] (IAA) imposes in relation to the activities sought to be authorized;

   ii) whether OPG is qualified to carry on the activity that the licence, including the proposed changes to the licensing basis, would authorize; and

   iii) whether, in carrying on that activity in the changed manner contemplated, OPG will 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.

5. As an agent of the Crown, the Commission recognizes its role in fulfilling the Crown's constitutional obligations, along with advancing reconciliation with Canada's Indigenous peoples. The Commission's responsibilities include the duty to consult and, where appropriate, accommodate Indigenous interests where the Crown contemplates conduct which may adversely impact potential or established Aboriginal[8] or treaty rights.[9] As such, the Commission must determine what engagement and consultation steps and accommodation measures are called for, respecting Indigenous interests.

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[6] CMD 24-H102, page 572 of 1230.
[7] S.C. 2019, c. 28, s.1.
[8] "Aboriginal" is the term used in this document when referring to the Crown's duty to consult as that is the term used in s. 35 of the Constitution Act, 1982. In all other cases, "Indigenous" is the preferred terminology and used accordingly.
[9] *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73; *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)*, 2004 SCC 74.

Public Hearing in Writing

6. On November 21, 2023, the Commission published *Notice of Hearing in Writing and Participant Funding*[10] for this matter, which invited requests to intervene by May 17, 2024. On March 20, 2024, the Commission published a *Revised Notice of Hearing in Writing and Participant Funding*[11] to announce an extension to the dates for filing submissions.

7. Pursuant to section 22 of the NSCA, the Acting President of the Commission established a Panel of the Commission over which he would preside, including Dr. V. Remenda, to consider the application. The Commission, in conducting a public hearing based on written materials, considered written submissions from OPG (CMD 24-H102.1, CMD 24-H102.1A) and CNSC staff (CMD 24-H102). The Commission also considered written submissions from 5 intervenors (see Appendix A for a list of interventions). A *Summary Record of Decision* was issued on August 3, 2024.

8. In making its decision, the Commission asked questions to CNSC staff and OPG through CMD 24-H102-Q. The Commission is satisfied with the completeness of the responses provided by CNSC staff (CMD 24-H102.A) and OPG (CMD 24-H102.1B).

Confidentiality Request

9. Alongside its application and supplemental submission, OPG submitted a request for confidentiality in accordance with rule 12 of the *Canadian Nuclear Safety Commission Rules of Procedure*. On June 10, 2024, the Commission issued its decision[12] on OPG's request for confidentiality, setting out the measures it would take to protect information, pursuant to subrule 12(3).

CNSC Participant Funding Program

10. Pursuant to paragraph 21(1) (b.1) of the NSCA, the Commission has established a Participant Funding Program (PFP) to facilitate the participation of Indigenous Nations and communities, members of the public and interested parties in Commission proceedings. In November 2023, up to $50,000 in funding to participate in this hearing process was made available through the CNSC's PFP. A Funding Review Committee (FRC), independent of the CNSC, reviewed the funding applications received and made recommendations on the allocation of funds. Based on the recommendations from the FRC, the CNSC awarded a total of $41,282.50 to 3 applicants: the Mississaugas of

[10] *Notice of Hearing in Writing and Participant Funding*, CNSC, November 21, 2023.
[11] *Revised Notice of Hearing in Writing and Participant Funding*, CNSC, March 20, 2024.
[12] *Commission Ruling on Request to Protect Confidential Information in the Matter of OPG's application to amend the Pickering Waste Management Facility (PWMF) licensing basis to process and store a maximum of 100 dry storage containers containing a minimum of 6-year cooled fuel at the PWMF*, CNSC, 10 June 2024.

Scugog Island First Nation (MSIFN), Northwatch and Hiawatha First Nation. Recipients were required to submit a written intervention respecting OPG's application.

2.0 DECISION

11. Based on its consideration of this matter, the Commission concludes the following:

- an impact assessment under the IAA is not required
- the contemplated licensing basis amendment does not present any novel adverse impact on any potential or established Aboriginal claim or right
- the Commission's responsibility to uphold the honour of the Crown and its constitutional obligations with regard to engagement and consultation respecting Indigenous interests has been satisfied
- OPG is qualified to carry on the activity that the amended licencing basis will authorize
- OPG, in carrying out that activity, will 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.

Therefore,

> the Commission amends the licensing basis for Ontario Power Generation's Pickering Waste Management Facility, located in Pickering, Ontario. Ontario Power Generation is authorized to process and store a maximum of 100 dry storage containers containing used fuel that has been cooled in wet storage at the Pickering Nuclear Generating Station for a minimum of 6 years. The terms and conditions of the current licence for the Pickering Waste Management Facility, WFOL-W4-350.00/2028, remain unchanged.

12. With this decision, the Commission directs CNSC staff to update the licence conditions handbook for the PWMF, *Pickering Waste Management Facility Licence Conditions Handbook: LCH-W4- 350.00/2028*, as described in Part 2 of CMD 24-H102.

13. To confirm that the temperature and dose rate thresholds pertaining to dry storage containers are satisfied, the Commission requires that OPG provide dose rates and temperature measurements for both the weld surface and seal tube collected during commissioning of 2 to 4 dry storage containers containing 6-year cooled fuel with a comparison to predictions to CNSC staff no later than 30 days following the collection of data. The Commission directs CNSC staff to report to the Commission on the results of the dose rate surveys and measured outer surface and weld surface temperatures of the first dry storage container containing a minimum of 6-year cooled fuel. This information shall also be presented to the Commission at a public meeting.

3.0 APPLICABILITY OF THE IMPACT ASSESSMENT ACT

14. In coming to its decision, the Commission was first required to determine whether any requirement under the IAA applied to the proposed amendment to the licensing basis for the PWMF, and whether an impact assessment of the proposal was required.

15. Pursuant to the IAA and the *Physical Activities Regulations*[13] made under it, impact assessments are to be conducted in respect of projects identified as having the greatest potential for adverse environmental effects in areas of federal jurisdiction. The proposed amendment to the licensing basis for the PWMF does not include activities listed in the *Physical Activities Regulations* that require an impact assessment or activities that meet the definition of a project on federal lands.

16. The Commission concludes that there is no requirement under the IAA for an impact assessment to be completed. The Commission is also satisfied that there are no other applicable requirements of the IAA to be addressed in this matter.[14]

4.0 ISSUES AND COMMISSION FINDINGS

17. In making its decision, the Commission considered a number of relevant issues and submissions relating to OPG's qualification to carry out the activity the amended licensing basis would authorize. The Commission also considered the adequacy of OPG's proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.

18. The matter before the Commission is an application to amend the PWMF licensing basis to process and store a maximum of 100 dry storage containers containing used fuel that has been cooled in wet storage for a minimum of 6 years. The Commission's decision focuses on the issues that it considers the most relevant for this application, specifically:

- assessment of the application
- provisions for safety relevant to the proposed licensing basis amendment in accordance with all relevant safety and control areas[15] (SCAs)
- Indigenous engagement and consultation
- other matters of regulatory importance
- the proposed licensing basis amendment

[13] SOR/2019-285.
[14] The IAA can impose other requirements on federal authorities in respect of authorizing projects that are not designated as requiring an impact assessment, including projects that are to be carried out on federal lands, or projects outside of Canada. This licensing basis amendment does not engage any such applicable IAA requirements.
[15] SCAs are the technical topics used by CNSC staff across all regulated facilities and activities to assess, evaluate, review, verify and report on regulatory requirements and performance.

4.1 Assessment of the Application

19. The Commission is contemplating authorizing OPG to operate in a manner that is not in accordance with the existing licensing basis for the PWMF. To examine the sufficiency of OPG's application for an amendment to its licensing basis, the Commission has considered the requirements of the NSCA, the *General Nuclear Safety and Control Regulations*[16] (GNSCR), and other applicable regulations made under the NSCA.

20. The Commission's consideration of OPG's application for an amendment to the licensing basis is in keeping with section 6 of the GNSCR, which provides that an application for the amendment of a licence shall contain:

a) a description of the amendment, revocation or replacement and of the measures that will be taken and the methods and procedures that will be used to implement it;
b) a statement identifying the changes in the information contained in the most recent application for the licence;
c) a description of the nuclear substances, land, areas, buildings, structures, components, equipment, and systems that will be affected by the amendment, revocation or replacement and of the manner in which they will be affected; and
d) the proposed starting date and the expected completion date of any modification encompassed by the application.

21. In Attachment 1 of CMD 24-H102.1, OPG provided a clause-by-clause explanation of how its application satisfies the requirements of the NSCA, the GNSCR, and other applicable regulations made under the NSCA.

22. The Commission concludes that OPG's application includes the information necessary for it to come to a decision on this matter.

4.2 Proposed Amendment to the Licensing Basis

23. OPG has applied for an amendment to its licensing basis, which would authorize it to process and store a maximum of 100 dry storage containers containing used fuel that has been cooled in wet storage for a minimum of 6 years (6-year cooled fuel). OPG's current licensing basis requires that used fuel from operating units at the Pickering NGS be cooled in the irradiated fuel bays for a minimum of 10 years before being transferred into dry storage containers and placed into storage buildings in the PWMF. There would be no changes made to the design of the dry storage containers, the processing building, or the storage buildings as a result of the proposed change in licensing basis.

24. Used fuel that has been cooled for 6 years rather than 10 years will have higher dose rates and generate higher temperatures. OPG proposes to initially load 2 to 4 dry storage containers with 6-year cooled fuel to confirm temperature and dose

[16] SOR/2000-202.

measurements around the dry storage containers before processing additional dry storage containers with 6-year cooled fuel. OPG has committed to provide results of dose rate surveys and dry storage container outer surface and weld surface temperatures to the CNSC to confirm that measured values are in line with predictions.

25. OPG explained that the purpose of the request is to create additional space in the Pickering NGS-B[17] irradiated fuel bay to support future operational needs. OPG noted that this space will be required for the unloading of two full unit cores. OPG noted that the proposed licensing basis amendment would not increase the currently authorized dry storage container inventory of 1,758 dry storage containers.

4.3 Views of Hearing Participants

26. The Commission received 5 interventions for this hearing. One intervention, from CANDU Owners Group Inc (CMD 24-H102.2) was in support of the proposed licensing basis amendment. C. Drimmie (CMD 24-H102.3) questioned the precedent of this request for other nuclear generating stations and whether dry storage containers containing a minimum of 6-year cooled fuel would become the norm. C. Drimmie also recommended that the change in licensing basis be contingent on certain conditions, including confirmatory tests and procedures for trial dry storage containers.

27. Northwatch (CMD 24-H102.4) expressed concerns regarding the safety of the proposed change in licensing basis, and recommended that the Commission require that OPG carry out a trial transfer of 9-year-old cooled fuel for evaluation by the Commission prior to OPG carrying out a trial transfer of 8-, 7- and 6-year cooled fuel. Northwatch also recommended that OPG prioritize the transfer of the current 10-year cooled fuel inventory to the dry storage containers.

28. Two Indigenous Nations submitted written submissions on this matter, MSIFN and HFN. MSIFN (CMD 24-H102.5) provided information on its review of OPG's application, discussed the applicability of the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and advocated for the free, prior and informed consent of MSIFN and other Williams Treaties Frist Nations before approving any licensing changes associated with the Pickering NGS. MSIFN also raised questions regarding spent fuel management, safety, and collaborative planning. MSIFN made 5 requests for accommodation, including consent.

29. HFN (CMD 24-H102.6) provided its views on OPG's licensing basis amendment application, and stated that HFN is opposed to the amendment. HFN noted that it had only two discussions, one with OPG and one with CNSC staff, regarding OPG's application. HFN expressed the view that "other engagement activities referred to by OPG or CNSC staff are only in relation to the context of our broader relationship and are not relevant to the decision of loosening the terms of storage for high-level

[17] Pickering NGS A refers to Pickering NGS units 1-4 and Pickering NGS B refers to units 5-8.

radioactive waste."[18] HFN also advocates for free, prior and informed consent, in relation to the UNDRIP.

30. The interventions from MSIFN and HFN are further discussed in section 4.5 of this Record of Decision.

4.4 OPG's Safety and Control Measures with Respect to the SCAs

31. The Commission examined OPG's proposed safety and control measures for the request to process and store, at the PWMF, up to 100 dry storage containers containing used fuel that has been cooled in wet storage at the Pickering NGS for a minimum of 6 years. The Commission's evaluation includes consideration of the proposed safety and control measures of relevance to the application, including:

- Operating performance
- Safety analysis
- Physical design
- Fitness for service
- Radiation protection
- Environmental protection
- Safeguards and non-proliferation

32. In section 3 of CMD 24-H101, CNSC staff informed the Commission that it reviewed OPG's application and supporting documentation. In section 5 of CMD 24-H101, CNSC staff reported that its review of OPG's application and supporting documents concludes that OPG has adequately assessed the hazards associated with licensed and proposed activities through safety assessments and demonstrated an adequate level of protection of the workers, the public, and the environment over a broad range of operating conditions.

4.4.1 Operating Performance

33. Licence condition 3.1 of the PWMF licence requires OPG to implement and maintain an operations program, which includes a set of operating limits. Operating performance includes an overall review of the conduct of the licensed activities and the activities that enable effective performance at the PWMF, as well as improvement plans and significant future activities. Section SCA- Operating Performance of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for this licence condition.[19]

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[18] CMD 24-H102.6, page 6.
[19] Pickering Waste Management Facility Licence Conditions Handbook: LCH-W4-350.00/2028, CMD 24-H102, page 587.

34. In section 2 of CMD 24-H102.1A Attachment 2, OPG submitted information on its nuclear operations program and how it applies to the current request. OPG noted that processing minimum 6-year cooled fuel is "essentially the same as processing 10-year cooled fuel,"[20] with minor changes required to operational documentation and procedures.

35. In section 2 of CMD 24-H102.1A Attachment 2, OPG submitted that it conservatively estimated that contact temperatures could potentially reach approximately 85 degrees Celsius (°C), which impacts worker safety in handling the dry storage containers. OPG added that the increased temperatures could potentially impact interfacing equipment such as Advanced Inspection and Maintenance equipment and International Atomic Energy Agency (IAEA) safeguards equipment, including seals. OPG noted that the temperature limit for the dry storage container flange is 50 °C, and that the interior temperature of the IAEA Seal Tubes must be below 70 °C.[21]

36. OPG also provided information on operational experience gained during the interim storage of one dry storage container containing 6-year cooled fuel in 1998. OPG noted that the measured outer liner temperatures from this container were 41.9 °C and 42.3 °C.[22] Based on this experience, OPG submitted that the actual contact temperatures of dry storage containers containing 6-year cooled fuel will not be as high as the 85 °C analyzed.

37. In addition, OPG provided information on its commissioning plan for the proposed activity to ensure that equipment temperature limits are met. OPG plans to initially load 2 to 4 dry storage containers with 6-year cooled fuel to confirm temperature and dose measurements before processing additional dry storage containers with a minimum 6-year cooled fuel.[23] OPG noted that it would reverse load[24] a dry storage container to return the fuel to wet storage if the limits cannot be met. OPG identified several documents that it would update prior to commissioning a dry storage container containing minimum 6-year cooled fuel, including *Operating Policies and Principles Pickering Waste Management Facility*.[25]

38. In section 3.1 of CMD 24-H102, CNSC staff reported that OPG continues to meet the regulatory requirements related to the Operating Performance SCA. CNSC staff added that based on its assessment of OPG's past performance, as well as OPG's application and supporting documents, OPG's operating program is adequate for the proposed licensing basis amendment.[26]

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[20] CMD 24-H102.1A, page 9.
[21] CMD 24 H102.1A, page 35.
[22] CMD 24 H102.1A, page 34.
[23] CMD 24-H102.1A, page 3.
[24] Reverse loading refers to emptying the dry storage container and returning the used fuel to the fuel bay.
[25] CMD 24-H102.1A, page 13.
[26] CMD 24-H102, page 15.

39. CNSC staff confirmed that OPG has a process in place to develop and manage changes to procedures to support the safe operations and maintenance of the PWMF. CNSC staff added that it reviews procedural-level documents as part of ongoing compliance verification activities to confirm that procedures reflect actual practices, as well as procedural adherence by OPG workers. CNSC staff added that it will continue to monitor OPG's performance in this SCA through regulatory oversight activities including inspections and desktop reviews of relevant program documentation.[27] CNSC staff also submitted that, should the Commission authorize OPG's request, OPG would provide the following information to CNSC staff after the initial loading of 2 to 4 dry storage containers with 6-year cooled fuel at PWMF:

- Confirmatory dose rate survey results
- Dry storage containers' outer surface and weld surface temperatures

40. In CMD 24-H102-Q, the Commission asked whether long-term monitoring activities of the 6-year cooled fuel dry storage containers would be different than for 10-year cooled fuel dry storage containers. In its response (CMD 24-H102.1B), OPG submitted that the long-term monitoring activities would remain consistent with OPG's existing procedures.

41. With respect to OPG's commissioning plan, Northwatch (CMD 24-H102.4) recommended that OPG start with 9-year cooled fuel and work down to 6-year cooled fuel while measuring temperatures and dose rates. In its submission, OPG noted that it had considered this option, and that it would take several months to complete.[28]

42. In CMD 24-H102-Q, the Commission asked about OPG's anticipated commencement and intended competition dates for this project. OPG reported that its current schedule to load minimum 6-year cooled fuel is targeted to commence in the third quarter of 2025 with an estimated completion in fourth quarter of 2028. OPG added that it plans to start defueling/unloading activities of four Pickering NGS-B, Units 5 through 8, in the third quarter of 2026.

43. Based on the information on the record, the Commission concludes that OPG has an operations program in place to accommodate the conduct of the licensed activities that the proposed licensing basis amendment would authorize. The Commission is satisfied that OPG currently has a nuclear operations program in place that meets regulatory requirements, and that OPG has a process in place to develop and manage changes to procedures to support the safe operations and maintenance of the PWMF, in accordance with the requirements set out in the licence conditions handbook.

[27] CMD 24-H102, page 15.
[28] CMD 24-H102.1A, page 34.

4.4.2 Safety Analysis

44. Licence condition 4.1 of the PWMF operating licence requires OPG to implement and maintain a safety analysis program. Safety analysis, which supports the overall safety case for a facility, includes a systematic evaluation of the potential hazards associated with the conduct of the licensed activity or the operation of a facility. Safety analysis also considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. Section SCA-Safety Analysis of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for this licence condition.[29]

45. In section 4.1 of CMD 24-H102.1A Attachment 2, OPG provided information on its safety analysis program and how it applies to the proposed licensing basis amendment, including that:

- the safety assessment demonstrates compliance with the radiation safety requirements during normal operation of the PWMF
- the annual public dose estimates accounting for the addition of 100 dry storage containers containing 6-year cooled fuel are a small percentage [30] of the 1 millisievert per year (mSv/y) public dose limit[31]
- OPG conducted fuel safety assessments in compliance with applicable requirements[32] for the minimum 6-year cooled fuel.

46. In section 3.2 of CMD 24-H102, CNSC staff submitted that OPG has a safety analysis program in place that satisfies regulatory requirements. CNSC staff confirmed that OPG's previous safety report was updated in 2018. CNSC staff added that OPG submitted Revision 007 of its safety report in November 2023, which is currently under review by CNSC staff. CNSC staff reported that OPG's safety report provides an assessment of potential consequences and demonstrates the safety case through defence in depth.

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[29] LCH-W4-350.00/2028, CMD 24-H102, page 589.

[30] OPG's preliminary estimate of the dose to members of the public at the Pickering NGS property boundary was calculated at 1 μSv (0.1% of the regulatory limit on annual dose to members of the public), based on PWMF I Safety Report methodology assumptions.

[31] Under the *Radiation Protection Regulations*, the regulatory limit for the dose to a member of the public is 1 mSv/y.

[32] Regulatory requirements for the management of used fuel include:

- Canadian Standards Association N292.0, *General principles for the management of radioactive waste and irradiated fuel,* CSA Group, 2014.
- Canadian Standards Association N292.2, *Interim dry storage of irradiated fuel*, CSA Group, 2013.
- Canadian Standards Association N292.3, *Management of low- and intermediate level radioactive waste*, CSA Group, 2014.
- Canadian Standards Association N286.7, *Quality assurance of analytical, scientific, and design computer programs*, CSA Group, 2016.

47. CNSC staff reported that it evaluated the information provided in OPG's application, including the safety assessment, and determined that OPG has adequately assessed the hazards associated with licensed activities and demonstrated an adequate level of protection over a broad range of operating conditions. CNSC staff added that OPG assessed the impact of the proposed change in licensing basis on the hazards analysis and determined that there is no change to the results of the hazard analysis.

48. CNSC staff also provided information in relation to the interim storage of one dry storage container containing 6-year cooled fuel, which was performed at the PWMF in 1998. CNSC staff reported that, based on this experience, it was determined that temperature measurements were approximately 40 °C lower than those in the safety assessment of OPG's current application. CNSC staff added that with respect to normal operation, the results of the safety assessments are consistent with this operating experience. CNSC staff also added that there would be no significant changes of safety related parameters during normal operations and that the operating experience, along with the modelling predictions, provides a technical basis for the expectation that the dry storage container temperature will be within the safety limits during the proposed project. CNSC staff further noted OPG's commitment to provide results of dose rate surveys and dry storage container outer surface and weld surface temperatures to the CNSC to confirm that measured values are in line with predictions.[33]

49. In CMD 24-H102-Q, the Commission asked whether OPG plans to improve the accuracy of its analysis models that predict temperatures in the dry storage containers and radiation fields, to reflect field measurements. OPG responded that it currently has no plan to modify the safety analysis to better predict actual field measurements. OPG reported that its software codes are validated as per Canadian Standards Association N-286.7-16, *Quality assurance of analytical, scientific, and design computer programs*[34] requirements.

50. In CMD 24-H102-Q, the Commission asked whether OPG reviewed the 1998 field measurements following the results of the modelling conducted in support of its application. In its response, OPG explained that both the 1998 field data and recently conducted analysis modeling were used to confirm that the storing of 6-year cooled fuel meets dry storage container design and safety requirements.[35]

51. In CMD 24-H102-Q, the Commission asked what monitoring activities OPG planned to implement to track real world data against modelled expectations. OPG provided a list of criteria for monitoring radiation dose rates and temperatures. OPG reported that temperature measurements will be taken in stages over a period of approximately five weeks after a dry storage container has been loaded. OPG also listed the equipment to be used for temperature and radiation field measurements.[36]

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[33] CMD 24-H102, page 17.
[34] Canadian Standards Association N286.7-16, *Quality assurance of analytical, scientific, and design computer programs*, 2016.
[35] CMD 24-H102.1B, page 5.
[36] CMD 24-H102-1B, page 6.

52. Based on the information on record as described above, the Commission concludes that OPG has a safety analysis program in place that is sufficient to accommodate for the licensed activities that the proposed licensing basis amendment would authorize. The Commission finds that:

- OPG currently has a safety analysis program in place that meets regulatory requirements
- the safety assessment demonstrates compliance with the radiation safety requirements during normal operation of the PWMF
- OPG has adequately assessed the hazards associated with licensed activities and demonstrated an adequate level of protection over a broad range of operating conditions
- operating performance, along with the modelling predictions, provides a technical basis for the expectation that the dry storage container temperature will be within the safety limits for the proposed processing and storage of up to 100 dry storage containers containing 6-year cooled used fuel
- OPG has committed to providing the confirmatory dose rate surveys and dry storage container outer surface and weld surface temperatures to the CNSC to confirm that the measured data are in line with predictions.

4.4.3 Physical Design

53. Licence condition 5.1 of the PWMF operating licence requires OPG to implement and maintain a design program. Physical design includes the activities to design systems, structures, and components to meet and maintain the design basis of a facility. The design basis is the range of conditions, according to established criteria, that the facility must withstand without exceeding authorized limits for the planned operation of safety systems. Section SCA-Physical Design of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for this licence condition.[37]

54. In section 5.1 of CMD 24-H102.1A Attachment 2, OPG provided information on its physical design program. OPG reported that the dry storage containers currently used for minimum 10-year cooled fuel will also be used for the storage of minimum 6-year cooled fuel and that the dry storage containers will not require any change to the facility design. OPG also reported that the governance, programs, and processes that form the licensing basis for PWMF's design program would not be affected by its application.

55. In CMD 24-H102.1A, OPG submitted that, if the measured temperatures are higher than the limits for the dry storage containers, OPG will have a backout option to reverse load a dry storage container back to the Pickering NGS irradiated fuel bay. OPG noted that its plan to reverse load a dry storage container would include lessons learned and

[37] LCH-W4-350.00/2028, CMD 24-H102, pages 591 and 593-594.

operating experience from a 2012 event that involved reverse loading a dry storage container.[38]

56. In section 3.3 of CMD 24-H102, CNSC staff submitted that OPG's proposal will have the effect of increased thermal gradient and higher irradiation on the dry storage containers due to loading younger fuel. CNSC staff added that this will lead to increased thermal loads and contact temperature of the dry storage containers. CNSC staff also reported that, according to OPG's analyses, the thermal stresses produced from 6-year cooled fuel stored in a dry storage container will not compromise the containment and shielding functions of the dry storage container under processing and storage conditions.[39]

57. CNSC staff submitted that OPG continues to implement a comprehensive pressure boundary program at PWMF. CNSC staff reported that, based on its verification activities, CNSC staff confirmed that there are no impacts on pressure boundary program from OPG's proposal to process and store 6-year-old cooled fuel at the PWMF.

58. CNSC staff noted OPG's plans to initially load 2 to 4 dry storage containers with 6-year cooled fuel to confirm temperature and dose measurements before processing additional dry storage containers with a minimum 6-year cooled fuel. CNSC staff added that it will monitor the temperature measurements to ensure OPG's compliance with regulatory requirements.

59. In CMD 24-H102-Q, the Commission asked for more information on what would trigger the reverse loading of the test dry storage containers. In its response (CMD 24-H102.1B), OPG explained that there are two key temperature thresholds pertaining to dry storage container processing:

    1. The dry storage container flange must be below 50 °C to conduct a post-weld inspection. OPG added that, however, exceeding this temperature on its own would not trigger reverse loading and OPG will extend the post-weld cooling period before inspection can be conducted.
    2. The interior temperature of the IAEA Seal Tubes must be below 70 °C to maintain the integrity of the existing IAEA seals. OPG noted that the IAEA has indicated that seal alternatives will be pursued if conditions are identified that make the existing seal unsuitable for use on dry storage containers containing a minimum of 6-year cooled fuel.

    OPG explained that the dry storage container would need to be reverse loaded if either of these temperature requirements cannot be met and no suitable mitigating actions are identified to resolve the issue. In its response to the same question (CMD 24-H102.A), CNSC staff confirmed the values reported by OPG and noted that, should OPG find through its testing that any other processing steps cannot be successfully completed, such as lid to base welding or weld inspections, then the test dry storage containers would have to be reverse loaded.

[38] CMD 24-H102.1A, page 35.
[39] CMD 24-H102, page 18.

60. The Commission concludes that OPG has an adequate physical design program in place to accommodate the activities that the proposed licensing basis amendment would authorize. The Commission finds that:

- the thermal stresses produced from 6-year cooled fuel stored in a dry storage container will not compromise the containment and shielding functions of the dry storage container under processing and storage conditions.
- there are no impacts on the pressure boundary program for OPG's proposal to process and store 6-year-cooled used fuel at the PWMF.

4.4.4 Fitness for Service

61. Licence condition 6.1 of the PWMF operating licence requires OPG to implement and maintain a fitness for service program. The fitness for service SCA covers activities that are performed to ensure that systems, structures, and components at the PWMF continue to effectively fulfill their intended purpose. Section SCA-Fitness for Service of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for this licence condition.[40]

62. In section 6.1 of CMD 24-H102.1A Attachment 2, OPG provided the Commission with information on its fitness for service program. OPG reported that the storage of minimum 6-year fuel will be incorporated into its aging management program, which complies with REGDOC-2.6.3, *Aging Management*.[41] REGDOC-2.6.3 sets out the requirements for managing the aging of structures, systems and components of a power reactor facility. OPG added that its proposal has no effect on the aging management program related licensing basis documents.

63. In section 3.4 of CMD 24-H102, CNSC staff submitted that OPG has satisfied regulatory requirements under the Fitness for Service SCA over the current licensing period. CNSC staff noted that OPG has mature programs in place to assess the effects of aging on the storage buildings and dry storage containers at the PWMF. CNSC staff added that the proposed licensing basis amendment is not expected to have adverse impacts on the fitness for service of the storage buildings or dry storage containers.

64. In its intervention, Northwatch (CMD 24-H102.4) expressed the view that the proposal to move 6-year cooled fuel from wet to dry storage will result in significant increases in both radiation levels and temperature levels, which would lead to accelerated aging. On this topic, OPG reported that it would assess any degradation mechanism and any impact on aging while storing minimum 6-year cooled fuel and incorporate any new findings into the dry storage container aging management plan accordingly.[42] In section 3.4 of CMD 24-H102, CNSC staff reported that the expected temperature and irradiation increases associated with the storage of 6-year cooled fuel are not sufficient to impact the integrity of the dry storage containers materials in the short or long term.[43]

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[40] LCH-W4-350.00/2028, CMD 24-H102, page 598.
[41] REGDOC-2.6.3, *Aging Management*, CNSC, March 2014.
[42] CMD 24-H102.1A, page 44.
[43] CMD 24-H102, page 20.

65. The Commission concludes that OPG has an adequate fitness for service program in place to accommodate the activities that the proposed licensing basis amendment would authorize. The Commission finds:

- the expected temperature and irradiation increases associated with the storage of 6-year cooled fuel are not sufficient to impact the integrity of the dry storage containers materials in the short or long term
- OPG currently has an aging management program that complies with REGDOC-2.6.3
- OPG will monitor degradation mechanisms and adapt its dry storage container aging management plan, if necessary.

4.4.5 Radiation Protection

66. Licence condition 7.1 of the PWMF operating licence requires OPG to implement and maintain a radiation protection program. Radiation protection includes measures for protecting the health and safety of persons from hazards associated with ionizing radiation. Radiation protection ensures that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable (ALARA), while taking into consideration social and economic factors. Section SCA-Radiation Protection of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for this licence condition.[44]

67. In section 7.1 of CMD 24-H102.1A Attachment 2, OPG provided information on its radiation protection program and how it applies to the storage of 6-year cooled fuel. OPG reported that:

- OPG's analysis shows that the anticipated dose rates for 6-year cooled used fuel would be approximately 2.5 times higher in comparison to the storage of 10-year cooled fuel
- OPG intends to use Radiation Exposure Permits to address worker safety and impact on OPG equipment
- the dose to public, as a result of the storage of minimum 6-year cooled fuel, would remain below regulatory limits
- the storage of minimum 6-year cooled fuel would have no impact on PWMF's Radiation Protection and ALARA Licensing Basis Documents

68. In section 3.5 of CMD 24-H102, CNSC staff submitted that OPG has a robust radiation protection program in place that satisfies regulatory requirements and is suitable to protect the health and safety of persons. CNSC staff reported that it reviewed the information provided in OPG's application, and is satisfied that doses to workers will remain below both the regulatory effective dose limit (50 mSv in a one-year dosimetry

[44] LCH-W4-350.00/2028, CMD 24-H102, page 600.

period) and OPG's Administrative Control Limit (20 mSv per year). CNSC staff added that it is satisfied with OPG's efforts to continue to implement radiological hazard controls to protect workers and ensure radioactive contamination is controlled at PWMF.

69. CNSC staff confirmed that OPG calculated a maximum individual effective dose to a PWMF worker and the maximum dose during a postulated accident scenario. CNSC staff also reported that OPG would apply the provisions of its radiation protection program and perform a dose assessment to validate the projected doses received by workers from dry storage container operations immediately after the loading of the trial dry storage containers. CNSC staff is satisfied that, based on this analysis, doses to workers will be maintained below dose limits for postulated accidents and that OPG's radiation protection program elements related to worker dose control are suitable for the proposed licensing basis amendment.[45]

70. CNSC staff reported that dry storage containers containing 6-year cooled fuel would be shielded with other dry storage containers containing older fuel. CNSC staff added that this would ensure that dose rates in the facility and surrounding areas will be managed and maintained ALARA.

71. In CMD 24-H102-Q, the Commission asked OPG to explain the mechanism by which placing dry storage containers containing 10-year cooled fuel around the dry storage containers containing the 6-year cooled fuel would provide additional shielding. OPG explained that the CANDU fuel dose rate profile decreases with time, thus placing minimum 10-year cooled fuel dry storage containers around the dry storage containers containing minimum 6-year cooled fuel will help keep dose rates in that aisle, and outside the building, ALARA.

72. The Commission concludes that OPG has a radiation protection program in place to accommodate the activities that the proposed licensing basis amendment would authorize. The Commission finds that:

- doses to workers will remain below the regulatory effective dose limit
- the dose to public, as a result of the storage of minimum 6-year cooled fuel, would remain below the regulatory limit
- CNSC staff will verify actual dose rate results to ensure they do not pose an unreasonable risk to workers.

4.4.6 Environmental Protection

73. Licence condition 9.1 of the PWMF operating licence requires that OPG implement and maintain an environmental protection program. Environmental protection programs are intended to identify, control, and monitor all releases of radioactive and hazardous

[45] CMD 24-H102, page 23.

substances, and aim to minimize the effects on the environment that may result from licensed activities. These programs include effluent and emission control, environmental monitoring, and estimated doses to the public. Licence condition 9.2 of the PWMF operating licence requires that OPG implement an environmental assessment follow-up plan.[46] Section SCA-Environmental Protection of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for these licence conditions.[47]

74. In section 9.1 of CMD 24-H102.1A Attachment 2, OPG provided information on its environmental protection program and how it applies to its request. OPG submitted that:

- the loading, transporting and storage of 6-year cooled or older used fuel is considered to be within the scope of relevant environmental assessments for the PWMF
- the storage of younger than 10-year cooled fuel does not require changing the Derived Release Limits, Action Levels or Internal Investigation Levels
- no change is required for OPG's environmental protection licensing basis documents nor on OPG governance, programs and processes.

75. CNSC staff confirmed that the activities that would be authorized by the proposed licensing basis amendment would not result in additional risk to the public or the environment. In section 3.6 of CMD 24-H102, CNSC staff reported that, based on compliance activities, the effluent and emissions monitoring program currently in place for the PWMF continues to protect human health and the environment and there are no foreseen revisions to the effluent and emissions monitoring program required as a result of the proposed amendment. CNSC staff added that releases at the PWMF are maintained low through administrative controls and a High Efficiency Particulate Air (HEPA) ventilation system. CNSC staff also reported that radiological releases to air from the facility are well below the licence limit and the action level and that there is no liquid effluent from the PWMF operations.

76. CNSC staff reported that OPG completed its latest revision of its site wide Pickering Environmental Risk Assessment (ERA) as well as a revised Predictive Effects Assessment (PEA) in 2022. CNSC staff noted that the risk to the public and the environment resulting from the storage of 6-year cooled fuel is included in the most recent revision of the PEA for the Pickering site. CNSC staff reported that the resulting calculated doses are well below the regulatory limit for the dose of 1 mSv/y to the most exposed member of the public.

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[46] As noted in LCH-W4-350.00/2028, "In May 2004, the Commission issued a *Record of Proceedings, including Reasons for Decision* for the PWMF Phase II EA concluding that the project, taking into account the implementation of mitigation measures, is not likely to cause significant adverse environmental effects. The EA process identified the need for an EA follow-up program for the PWMF Phase II project." (CMD 24-H102, page 610).

[47] LCH-W4-350.00/2028, CMD 24-H102, page 605.

77. Based on the information on record as described above, the Commission concludes that OPG has an environmental protection program in place to accommodate the activities that the proposed licensing basis amendment would authorize. The Commission finds that:

- the storage of younger than 10-year cooled fuel does not require changing the Derived Release Limits, action levels or internal investigation levels for the PWMF
- the proposed licensing basis amendment would not result in additional risk to the public or the environment
- radiological releases to air from the facility are well below the licence limit and the action level
- calculated doses are well below the regulatory limit for the dose of 1 mSv/y to the most exposed member of the public.

4.4.7 Safeguards and Non-Proliferation

78. Licence condition 13.1 of the PWMF operating licence requires OPG to implement and maintain a safeguards program. The CNSC's regulatory mandate includes ensuring conformity with measures required to implement Canada's international obligations under the *Treaty on the Non-Proliferation of Nuclear Weapons* (NPT).[48] Pursuant to the NPT, Canada has entered into a *Comprehensive Safeguards Agreement*[49] and an *Additional Protocol*[50] (safeguards agreements) with the IAEA. The objective of these safeguards agreements is for the IAEA to provide credible assurance on an annual basis to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no undeclared nuclear material or activity in this country. Section SCA- Safeguards and Non-Proliferation of the licence conditions handbook for the PWMF sets out the regulatory requirements and compliance verification criteria for this licence condition.[51]

79. In section 13.1 of CMD 24-H102.1A Attachment 2, OPG submitted information on its safeguards program and how it applies to the request, including that:

- OPG will continue to provide the necessary information for safeguards implementation and compliance to the IAEA and CNSC on a timely basis
- the storage of minimum 6-year cooled fuel will have no impact on IAEA inspections or access to IAEA equipment.

OPG identified that the storage of minimum 6-year cooled fuel may have some impact on existing IAEA safeguards surveillance monitoring equipment with respect to temperatures and sealing processes. OPG reported that it would continue its analysis in

[48] INFCIRC/140.
[49] INFCIRC/164.
[50] INFCIRC/164/Add.1.
[51] LCH-W4-350.00/2028, CMD 24-H102, page 623.

this area and continue to work with both the IAEA and CNSC to reach an "agreeable outcome."[52]

80. OPG reported that the NuFlash tracking system,[53] used for tracking nuclear fuel location and storage history, does not currently allow the preparation of dry storage container packages for minimum 6-year cooled fuel. OPG submitted that it would make the required changes to update the NuFlash database to allow for 100 dry storage containers to be processed with 6-year to 10-year cooled fuel. OPG noted that these changes would be completed prior to the commissioning of the first dry storage container containing minimum 6-year cooled fuel.

81. In section 3.7 of CMD 24-H102, CNSC staff confirmed that OPG maintains a safeguards program that complies with regulatory requirements. CNSC staff confirmed that the current IAEA seals and equipment applied on the dry storage containers are not designed for the higher estimated temperatures and radiation fields that 6-year cooled fuel could generate. CNSC staff reported that the increased temperature of the dry storage containers can create potential damage to IAEA seals, as well as impacting IAEA inspectors' safety when performing safeguards activities on the dry storage containers.

82. Further on this topic, CNSC staff reported that the IAEA has indicated that its equipment and seals should not be impacted if the temperatures of the dry storage containers stay below 70 °C. CNSC staff reported that the IAEA will support OPG's commissioning test case to verify if the actual temperatures will be similar to the calculated temperatures or the measured temperatures from the 1998 dry storage container containing 6-year cooled fuel. CNSC staff explained that OPG would load 2 to 4 dry storage containers with minimum 6-year cooled fuel within the view of the IAEA's surveillance camera and the IAEA will assess whether there is any impact on their equipment, seals, or inspector safety for a period of time.

83. CNSC staff added that it would coordinate with the IAEA and OPG to explore alternative safeguards measures and/or operational approaches if it is determined that any of the existing safeguards measures will be negatively impacted by the higher radiation dose and temperature from the 6-year cooled fuel. CNSC staff further noted OPG's commitment to reverse load the dry storage containers and return them to wet storage if necessary.

84. Based on the information on record as described above, the Commission concludes that OPG has an adequate safeguards program in place to accommodate the activities that the proposed licensing basis amendment would authorize. The Commission finds that:

- OPG will continue to provide the necessary information for safeguards implementation and compliance to the IAEA and CNSC

[52] CMD 24-H102.1A, page 59.
[53] NuFlash is a system used for tracking nuclear fuel location and storage history used by OPG.

- CNSC staff will coordinate with the IAEA and OPG to explore alternative safeguards measures and/or operational approaches, if it is determined that any of the existing safeguards measures will be negatively impacted by the higher radiation dose and temperature
- OPG has proposed to reverse load the dry storage containers containing 6-year cooled fuel if IAEA requirements cannot be met

4.4.8 Conclusion on OPG's Provisions for Safety in Accordance with the Safety and Control Areas

85. The Commission is satisfied that OPG is qualified to carry on the licensed activities that the amended licensing basis would authorize. The Commission finds that OPG has adequate programs and measures in place with respect to the relevant SCAs to ensure that the health and safety of workers, the public and the environment will be protected. The Commission further concludes that OPG has measures in place to provide for the maintenance of national security and to implement international obligations to which Canada has agreed.

4.5 Indigenous Engagement and Consultation

86. The Commission considered the information provided by CNSC staff, OPG and intervenors regarding Indigenous consultation and engagement activities in respect of this application to amend the licensing basis for the PWMF. Indigenous consultation refers to the common law duty to consult with Indigenous Nations and communities pursuant to section 35 of the *Constitution Act, 1982*.[54]

87. The common law duty to consult with Indigenous Nations and communities is engaged when the Crown contemplates action that may adversely affect established or potential Aboriginal and/or treaty rights. The CNSC, as an agent of the Crown and as Canada's nuclear regulator, recognizes and understands the importance of building relationships and engaging with Canada's Indigenous Nations and communities. The CNSC ensures that its licensing decisions under the NSCA uphold the honour of the Crown and consider potential impacts to claimed or established Aboriginal and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982*.

88. The duty to consult is engaged wherever the Crown has "knowledge, real or constructive, of the potential existence of an Aboriginal right or title and contemplates conduct that might adversely affect it".[55] Licensing decisions of the Commission, where Indigenous interests may be adversely impacted, can engage the duty to consult, and the Commission must be satisfied that it has met the duty prior to making the relevant licensing decision.

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[54] Schedule B to the *Canada Act, 1982* (UK), 1982, c 11.
[55] *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 at para 35.

89. The *United Nations Declaration on the Rights of Indigenous Peoples Act*[56] (UNDA) came into force in Canada on June 21, 2021. The Government of Canada has clarified that "[t]he Act itself does not immediately change Canada's existing duty to consult Indigenous groups."[57] Nonetheless, the Commission acknowledges that its commitment to reconciliation, the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP),[58] and section 35 of the *Constitution Act*, including the Crown's duty to consult and accommodate, have aspects that intersect and that this is an evolving area of law. The Commission also acknowledges the need to consider the *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples*.[59] The statutory obligation to consult and cooperate in section 5 of UNDA is distinct from the constitutional duty to consult. The Commission recognizes the need to uphold the honour of the Crown during its review of this matter.

90. As recently articulated in *Thomas and Saik'uz First Nation v. Rio Tinto Alcan Inc.* (Thomas and Saik'uz), while the effect of UN Declaration legislation on the common law has yet to be determined by the courts, it supports a robust interpretation of Indigenous rights.[60] Additionally, the Supreme Court of Canada has stated that "through [UNDA] […] the Declaration is incorporated into the country's domestic positive law."[61]

91. In section 3.8 of CMD 24-H102, CNSC staff reported that OPG's proposed change to the PWMF licensing basis does not involve any physical changes to the footprint of OPG's PWMF operations, and the impacts beyond the limits of the PWMF are expected to be negligible. Therefore, CNSC staff found that the licensing basis amendment requested by OPG is unlikely to have potential new impacts on Indigenous and/or treaty rights.

Indigenous Engagement by CNSC Staff

92. In section 3.8.1.1 of CMD 24-H102, CNSC staff provided the Commission with information about its engagement activities with the Indigenous Nations and communities that were identified as having a potential interest in OPG's licensing basis amendment application. CNSC staff identified the following Indigenous Nations and

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[56] S.C. 2021, c.14.
[57] Department of Justice Canada, *Implementing the United Nations Declaration on the Rights of Indigenous Peoples Act, About the Act* (under "How the Act impacts the existing duty to consult"), retrieved from the Department of Justice – Government of Canada's website: https://www.justice.gc.ca/eng/declaration/legislation.html, September 4, 2024.
[58] *United Nations Declaration on the Rights of Indigenous Peoples*, The United Nations Department of Economic and Social Affairs, September 2007.
[59] Department of Justice Canada, *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples*, 2018.
[60] *Thomas and Saik'uz First Nation v. Rio Tinto Alcan Inc*., 2022 BCSC 15 at para 212.
[61] *Reference re An Act respecting First Nations, Inuit and Métis children, youth, and families*, 2024 SCC 5 at para 15.

communities with established Indigenous and treaty rights to the lands and waters surrounding and inclusive of the Pickering NGS site:

- Alderville First Nation
- Curve Lake First Nation (CLFN)
- Hiawatha First Nation (HFN)
- Mississaugas for Scugog Island First Nation (MSIFN)
- Chippewas of Rama First Nation
- Chippewas of Georgina Island First Nation
- Beausoleil First Nation

CNSC staff identified the following Indigenous Nations and communities with interests in the PWMF and the lands and waters surrounding and inclusive of the PWMF:

- Six Nations of the Grand River
- Mohawks of the Bay of Quinte First Nation
- Métis Nation of Ontario

93. CNSC staff reported that it sent letters of notification to the identified Indigenous Nations and communities in December 2023 to inform them of OPG's application, opportunities to participate in the hearing process, and the availability of participant funding. CNSC staff also followed up with each Indigenous Nations and community via email.

94. CNSC staff informed the Commission that MSIFN and HFN expressed interest in OPG's licensing basis amendment application. CNSC staff reported that MSIFN has previously raised concerns regarding the PWMF and the storage of waste on-site and within their treaty and traditional territories. CNSC staff noted that MSIFN and CNSC staff have had ongoing discussions regarding this concern throughout 2023, including an in-person meeting with MSIFN leadership in November 2023 in their community. CNSC staff also reported that CLFN and HFN have also expressed interest and concerns regarding the operations and activities at the PWMF and have expressed interest in further discussions with OPG and CNSC staff regarding this application.

95. In CMD 24-H102-Q, the Commission enquired about CNSC staff's communication practices with regard to concerns raised by Indigenous Nations and communities surrounding spent fuel at Pickering NGS. In its response (CMD 24-H102.A), CNSC staff reported that it has Terms of Reference for long-term engagement with several Indigenous Nations with rights and interests in relation to the PWMF. CNSC staff added that it engages in open and transparent dialogue with Indigenous Nations and communities to inform them of activities that may be of interest, address their concerns, seek their input, and encourage and support their participation in Commission proceedings. CNSC staff also reported that it meets monthly with OPG representatives to discuss engagement and consultation on all OPG facilities and operations, including the Pickering NGS and the PWMF.

Indigenous Engagement by OPG

96. In section 3 of CMD 24-H102.1A Attachment 2, OPG provided information regarding its ongoing engagement with Indigenous Nations and communities with established or asserted rights and/or interests regarding the PWMF. OPG reported that it engaged with the following Indigenous Nations and communities regarding its request:

- Williams Treaties First Nations
- Mohawks of the Bay of Quinte
- Métis Nation of Ontario, Region 8

OPG reported that it engaged with these Indigenous Nations and communities throughout 2022 and 2023 to provide them with information regarding activities at the PWMF and to discuss any identified issues and concerns.

Submissions by Indigenous Nations

97. Two Indigenous Nations submitted written submissions on this matter, MSIFN and HFN. In its submission, CMD 24-H102.5, MSIFN provided information on its review of OPG's licensing basis amendment application, discussed the UNDRIP and advocated for free, prior and informed consent of MSIFN and other Williams Treaties First Nations before approving any licensing changes associated with the Pickering NGS. MSIFN also raised questions regarding spent fuel management, safety and collaborative planning. MSIFN made 5 requests for accommodation, including consent. MSIFN submitted that:

> *"MSIFN is committed to ensuring the CNSC and OPG advance the PNGS project in the right way. At the forefront of this should be the rights and consent of impacted First Nations, protection of the environment and human health by adhering to the highest standards, and long-term planning for safe storage and management of nuclear waste. We look forward to continuing these discussions."*

98. In its submission, CMD 24-H102.6, HFN provided its views on OPG's licensing basis amendment application, and stated that HFN is opposed to the amendment. HFN noted that it had only two discussions, one with OPG and one with CNSC staff, regarding OPG's application. HFN expressed the view that "other engagement activities referred to by OPG or CNSC staff are only in relation to the context of our broader relationship and are not relevant to the decision of loosening the terms of storage for high-level radioactive waste."[62] HFN also advocates for free, prior and informed consent, in relation to the UNDRIP.

[62] CMD 24-H102.6, page 6.

99. In CMD 24-H102-Q, the Commission enquired about OPG's communication practices with regard to concerns raised by Indigenous Nations and communities surrounding spent fuel at Pickering NGS. OPG reported that it communicates regularly with Indigenous Nations and communities through various activities including framework meetings, written communication and/or workshops with the objective of ensuring a two-way dialogue. OPG added that it was in discussions with Indigenous Nations and communities on developing and implementing a specific waste table forum that was suggested to be held in mid-2024.[63]

100. In CMD 24-H102-Q, the Commission enquired about OPG's engagement with MSIFN. OPG reported that OPG has been engaging and collaborating with MSIFN to understand and support a benchmarking of best practices related to the interim storage of used fuel onsite. OPG reported that it also provided supporting documents that show how OPG's used fuel dry storage containers adhere to international standards and best practices, including those of the IAEA.[64]

4.5.1 Conclusion on Indigenous Engagement and Consultation

101. The Commission is satisfied with CNSC staff's efforts to consult with Indigenous Nations and communities who may have interest in OPG's application before the Commission, and that an opportunity to intervene was provided. These engagement efforts included email and information exchanges, and other various activities including framework meetings, written communication and/or workshops, reflected in the submissions by CNSC staff (CMD 24-H102) and OPG (CMD 24-H102.1A). The Commission finds that it has received sufficient evidence in this regard to render its decision on OPG's application. The Commission recognizes Canada's commitment to UNDRIP and the framework for reconciliation and implementation of UNDRIP set out within UNDA. The Commission has assessed the duty to consult and accommodate in relation to the proposed licensing basis amendment within the context of and with acknowledgement of UNDA.

102. The Commission finds that the proposed licensing basis amendment will not cause any new adverse impacts to any potential or established Indigenous and/or treaty rights.[65] The licensing basis amendment requested by OPG does not include any new licensed activities that could cause new impacts to the environment or changes in the ongoing licensed activities at the PWMF. There would be no changes made to the design of the dry storage containers, the processing building, or the storage buildings as a result of the proposed change in licensing basis. The proposed licensing basis amendment would not increase the currently authorized dry storage container inventory of 1,758 dry storage containers.

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[63] CMD 24-H102.1B, page 9.
[64] CMD 24-H102.1B, page 8.
[65] *Rio Tinto Alcan v. Carrier Sekani Tribal Council,* 2010 SCC 43, at paras 45 and 49.

103. Notwithstanding the above, the Commission is further satisfied that Indigenous consultation activities undertaken by CNSC staff, engagement activities undertaken by OPG, and the hearing in writing process all provided opportunities for learning about the Indigenous rights held and asserted in the area surrounding the PWMF and the views of Indigenous Nations and communities about what impacts the proposed change in licensing basis could have on those rights. The Commission therefore concludes that its responsibility to uphold the honour of the Crown and its constitutional obligations with regard to engagement and the duty to consult respecting Indigenous interests has been satisfied.

104. The Commission has heard the concerns raised by Indigenous Nations and communities respecting the management of waste – particularly high-level nuclear waste – in their territory. The Commission notes that the efforts made by CNSC staff to consult with Indigenous Nations and communities are key to the important work of the Commission toward reconciliation and relationship-building with Canada's Indigenous peoples. The Commission expects CNSC staff to continue to build meaningful long-term relationships with Indigenous Nations and communities as part of the CNSC's reconciliation efforts.

4.6 Other Matters of Regulatory Importance

4.6.1 Public Engagement

105. The Commission considered OPG's public information and disclosure program (PIDP) and whether OPG's existing program is sufficient to communicate updates to the public surrounding the storage of minimum 6-year cooled fuel at the PWMF.

106. In section 3.10 of CMD 24-H102, CNSC staff informed the Commission that OPG provided an opportunity for public engagement and information exchange regarding the storage of minimum 6-year cooled fuel at the PWMF. CNSC staff added that OPG should continue to leverage its website and various social media platforms, conduct outreach and engagement with the public on this licensing basis amendment and other ongoing activities of interest at the PWMF.

107. Based on the information on record as described above, the Commission concludes that OPG has adequate measures in place to communicate to the public information about the health, safety and security of persons and the environment, including information relevant to the storage of minimum 6-year cooled fuel at the PWMF.

4.7 Licensing Basis Amendment

108. The current licensing basis authorizes OPG to process and store, at the PWMF, dry storage containers containing used CANDU fuel that has been cooled in wet storage at the Pickering NGS for at least 10 years. OPG is seeking authorization to process and

store, at the PWMF, up to 100 dry storage containers containing used fuel that has been cooled in wet storage at the Pickering NGS for a minimum of 6 years. OPG proposes to initially load 2 to 4 dry storage containers with 6-year cooled fuel to confirm temperature and dose measurements around the dry storage containers before processing additional dry storage containers with 6-year cooled fuel. OPG has committed to provide results of dose rate surveys and dry storage container outer surface and weld surface temperatures to the CNSC to confirm that measured values are in line with predictions.

109. In Part 2 of CMD 24-H102, CNSC staff described the proposed changes to OPG's licence conditions handbook to provide compliance verification criteria for the amended licensing basis. CNSC staff reported that the proposed changes were the following:

- Licence Condition G1, Licensing Basis for licensed activities: add 92896-CORR-00531-01478 and 92896-CORR-00531-01530 P as licensee documents that do not require notification of change
- Licence condition 3.2, Reporting Requirements: add paragraph on Commissioning dry storage containers containing minimum 6-year cooled fuel
- Appendix D, List of Licensee documents that require notification of change: add 92896-CORR-00531-01478 and 92896-CORR-00531-01530 P

CNSC staff reported that it will continue to monitor OPG's performance through regulatory oversight activities including inspections and desktop reviews of relevant program documentation.

110. The specific reporting requirements proposed by CNSC staff are as follows:

> "***Commissioning dry storage containers containing minimum 6-year cooled fuel*** *Pursuant to e-Doc 7222530, the licensee has committed to providing dose rates and temperature measurements for both the weld surface and seal tube collected during commissioning of 2 to 4 dry storage containers containing 6-year cooled fuel with a comparison to predictions to CNSC staff no later than 30 days following the collection of data.*
>
> *The licensee shall not proceed to the processing of DSCs* [dry storage containers] *loaded with less than 10-year cooled fuel until CNSC staff have reviewed the results of commissioning and conclude that the results are acceptable. This conclusion will be provided as a formal letter sent to OPG from CNSC staff.*"[66]

111. Northwatch (CMD 24-H102.4) recommended that OPG start with 9-year cooled fuel and working down to 6-year cooled fuel while measuring temperatures and dose rates. C. Drimmie (CMD 24-H102.3) recommended that the amendment to the licensing basis be contingent on:

[66] CMD 24-H102, page 79.

a. the results of the tests of loading and observing a number of dry storage containers for 6 months that demonstrate safe handling and conditions for those trial dry storage containers;
b. completion of a satisfactory reverse loading procedure for the dry storage containers; and
c. a limitation specifying that this change applies only to the current licence period and will not be automatically roll over into future licences without a broader discussion with all affected communities (e.g., municipalities, Indigenous communities and rights holders).

The Commission notes that any future licence renewal application would be considered in a separate public hearing.

112. The Commission is satisfied that the analysis conducted by OPG and CNSC staff demonstrates that the expected increased dose rates and temperatures associated with the storage of 6-year cooled fuel are not sufficient to impact the integrity of the dry storage containers materials in the short or long term. The Commission is further satisfied that OPG has proposed adequate measures to ensure that the increased temperatures and dose rates will not affect the health and safety of workers. The Commission therefore accepts the approach to commissioning dry storage containers containing minimum 6-year cooled fuel proposed by OPG, with CNSC staff's proposed compliance verification.

113. The Commission expects OPG to provide dose rate and temperature measurements for both the weld surface and seal tube collected during commissioning of 2 to 4 dry storage containers containing 6-year cooled fuel with a comparison to predictions to CNSC staff no later than 30 days following the collection of data. The Commission directs CNSC staff to report to the Commission on the results of the dose rate surveys and measured outer surface and weld surface temperatures of the first dry storage container containing a minimum of 6-year cooled fuel. This information shall also be presented to the Commission at a public meeting of the Commission.

114. The Commission notes that this decision does not abrogate OPG from its responsibility to comply with IAEA safeguards requirements. Should it be determined that OPG is not able to satisfy the IAEA requirements, OPG will be required to take measures, including reverse loading the dry storage containers containing 6-year cooled fuel, to ensure that IAEA requirements continue to be met. The Commission is satisfied that CNSC staff will provide regulatory oversight to ensure that regulatory requirements continue to be met.

5.0 CONCLUSION

115. The Commission has considered OPG's licensing basis amendment application. The Commission has also considered the information and submissions of OPG, and CNSC staff, as well as the written interventions submitted for the hearing. Based on its consideration of the evidence on the record, the Commission amends the licensing basis to authorize OPG to process and store a maximum of 100 dry storage containers containing a minimum of 6-year cooled fuel.

116. To confirm that the temperature and dose rate thresholds pertaining to dry storage containers are satisfied, the Commission directs OPG to provide dose rates and temperature measurements for both the weld surface and seal tube collected during commissioning of 2 to 4 dry storage containers, containing 6-year cooled fuel, with a comparison to predictions to CNSC staff no later than 30 days following the collection of data. The Commission directs CNSC staff to report to the Commission on the results of the dose rate surveys and measured outer surface and weld surface temperatures of the first dry storage container containing a minimum of 6-year cooled fuel. This information shall also be presented to the Commission at a public meeting of the Commission.

Timothy Berube

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Date: 2024.09.26 14:22:30 -04'00'

Dr. Timothy Berube
Presiding Member

Appendix A – Intervenors

Intervenors	Document Number
CANDU Owners Group Inc.	CMD 24-H102.2
Christine Drimmie	CMD 24-H102.3
Northwatch	CMD 24-H102.4
Mississaugas of Scugog Island First Nation	CMD 24-H102.5
Hiawatha First Nation	CMD 24-H102.6