



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

## Record of Decision

In the Matter of

Applicant Ontario Power Generation Inc.

Subject Application to Amend Nuclear Power Reactor  
Operating Licence for the Pickering Nuclear  
Generating Station

Date of  
Decision September 29, 2016

## **RECORD OF DECISION**

Applicant: Ontario Power Generation Inc.

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

Purpose: Application to Amend the Nuclear Power Reactor  
Operating Licence for the Pickering Nuclear Generating  
Station

Application received: April 19, 2016

Date of decision: September 29, 2016

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

Members present: M. Binder, Chair

**Licence:** Amended

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## 1.0 INTRODUCTION

1. Ontario Power Generation Inc. (OPG) has submitted an application to the Canadian Nuclear Safety Commission<sup>1</sup> (CNSC), under subsection 24(2) of the *Nuclear Safety and Control Act*<sup>2</sup> (NSCA), for an amendment to its Nuclear Power Reactor Operating Licence (PROL) for the Pickering Nuclear Generating Station (NGS) located in Pickering, ON. The current licence, PROL-48.02/2018, expires on August 31, 2018.
2. Pursuant to Part IV (ii) of the current PROL, the Pickering NGS is authorized to possess, transfer, manage and store nuclear substances, including heavy water, which is required for, or associated with the operation of the Pickering NGS. As part of its licensed activities, OPG currently transfers heavy water from the Pickering NGS to the Darlington Tritium Removal Facility for detritiation, and then the detritiated heavy water is returned to the Pickering NGS. The current licensed activities do not allow the storage of heavy water from other nuclear facilities at the Pickering NGS site.
3. In April 2016, OPG submitted a request to allow it to temporarily possess, transfer, manage and store heavy water from other nuclear facilities at the Pickering NGS, should the need arise. Heavy water stored at the Pickering NGS site would still have to come within the Pickering PROL limits.
4. OPG submitted that the heavy water coming from other sites would be stored temporarily at the Pickering NGS site. It is intended that the heavy water will be stored as needed while the Darlington Tritium Removal Facility operational improvements are underway and also during station outages, such as the upcoming Darlington NGS refurbishment activity, and then returned to the station(s) it came from, once the units at those stations are returned to service. This licence application is not for the long-term storage of heavy water from other nuclear facilities at the Pickering NGS site.
5. The heavy water coming from other sites would be stored in the existing tanks, and no new facilities or storage tanks will be added or built. If new facilities are required, OPG will seek approval under a separate request. OPG has confirmed that there will be no processing or treatment of the heavy water at the Pickering NGS.
6. OPG noted that this licence amendment would help support operational flexibility at other nuclear facilities, such as, but not limited to, the Darlington NGS, during upcoming refurbishment activities and outages. Additionally, OPG noted that this will prevent any backlog of unprocessed heavy water from occurring.

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

<sup>2</sup> Nuclear Safety and Control Act (S.C. 1997, c. 9)

Issue

7. In considering the application, the Commission was required to decide:
- a) what environmental assessment review process to apply in relation to this application;
  - b) if OPG is qualified to carry on the activity that the amended licence would authorize; and
  - c) if in carrying on that activity, 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.

Hearing

8. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to review the application. The Commission, in making its decision, considered information submitted for a hearing based on written materials held on September 30, 2016, in Ottawa ON. The Commission considered written submissions from OPG (CMD 16-H111.1), CNSC staff (CMD 16-H111), and three written submissions from intervenors (CMD 16-H111.2 to CMD 16-H111.4).

**2.0 DECISION**

9. 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 OPG satisfies the conditions of subsection 24(4) of the NSCA. Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the Nuclear Power Reactor Operating Licence PROL-48.02/2018 issued to Ontario Power Generation for its Pickering Nuclear Generating Station located in Pickering, ON. The amended licence, PROL-48.03/2018, is valid until August 31, 2018.

10. The Commission amends Part IV of the licence as recommended by CNSC staff in CMD 16-H111.

### 3.0 ISSUES AND COMMISSION FINDINGS

#### 3.1 Heavy Water Storage and Transportation Overview

11. OPG submitted that, if authorized to store the heavy water from other nuclear facilities at the Pickering NGS, OPG will continue to follow the existing heavy water management program governance, under N-PROG-AS-0008 “Heavy Water Management”, as well as the associated processes and procedures currently in place.
12. CNSC staff submitted that the tritium concentration in the heavy water coming from other nuclear facilities will be within the tritium concentration limits in the current Pickering operating licence. OPG has implemented a 5-Year Detritiation plan to cope with the heavy water transfers, and ensure that the tritium concentrations are maintained below regulatory limits. All heavy water shipments will be sampled for their tritium concentration by the consignor prior to the shipment, as required by the *Packaging and Transport of Nuclear Substances Regulations*<sup>3</sup>. The consignee (at Pickering NGS) is then notified of the shipment in accordance with those regulations, and will reject any shipment with a tritium concentration greater than the licensing limits.
13. The Commission notes that the heavy water coming from other sites will be stored in existing Pickering storage facilities. Therefore, no new facilities or storage tanks would be added or built. If new facilities would be required, OPG will have to seek the approval of the CNSC under a separate request. Additionally, CNSC staff confirmed there will be no processing or treatment of the heavy water at the Pickering NGS.
14. The Commission notes that heavy water is already transported from other nuclear facilities for treatment at the Darlington Tritium Removal Facility. Additionally, the Commission notes that the licence limits for the tritium concentration at the Darlington NGS are currently lower than the licence limits for the Pickering NGS. All heavy water from other nuclear facilities stored at the Pickering NGS site will comply with the existing Pickering PROL licence limits.
15. Following the EA that was performed under the NSCA and its regulations, CNSC staff determined that, as the activities proposed in this licence amendment application are similar in nature to currently authorized activities, there are no potential additional impacts to the environment associated with this application that have not been previously addressed. Therefore, CNSC staff reported that the licensee will adequately protect the environment. The Commission agrees with this analysis by CNSC staff regarding the EA for this licence amendment request.
16. The Commission notes that CNSC staff has encouraged OPG to communicate with interested Aboriginal communities regarding the transport and storage of radioactive substances in relation to their operations. In light of the fact that authorizing this activity in the Pickering PROL does not represent a likelihood of additional impacts, the

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<sup>3</sup> *Packaging and Transport of Nuclear Substances Regulations*, 2015, SOR/2015-145

Commission is satisfied with this measure. The Commission expects OPG's outreach to engage with any individuals or groups who have concern about this activity.

### 3.2 Interventions

17. The Commission notes that members of the public were invited to submit written interventions for this hearing, as detailed in a Notice of Hearing published on August 18, 2016.
18. In her intervention, J. Hayward-Haines (CMD 16-H111.2) commented that the current technology and procedures for the transportation and storage of heavy water are inadequate. The Commission notes that OPG has a well-established program for the management of heavy water, which includes the associated processes and procedures. The Commission further notes that OPG already routinely transfers heavy water between the Pickering NGS and the Darlington Tritium Removal Facility. It is important to note that OPG will continue to follow its existing processes and procedures for heavy water management, when managing heavy water coming from other nuclear facilities.
19. In their interventions, the Bruce Peninsula Environmental Group and Durham Nuclear Awareness (DNA), (CMD 16-111.3 and CMD 16-111.4, respectively), commented on the specification of "other nuclear facilities", as opposed to only the Darlington NGS. The Commission notes that the *Packaging and Transport of Nuclear Substances Regulations* apply, regardless of which facility the heavy water is coming from. The Commission is also satisfied that the tritium concentration in the heavy water will not exceed the limits set out in the current Pickering licence, regardless of which facility the heavy water originates from; on this basis, the Commission is satisfied that there is no need to limit the source of heavy water.
20. In its intervention, the Bruce Peninsula Environmental Group (CMD 16-111.3) commented on the fact that there is a tritium leak present at the Pickering NGS<sup>4</sup>, and enquired whether more tritium could be stored at the site, without additional tritium leakage. This intervenor further commented that this licence amendment request would lead to an increase in the inventory of heavy water stored at the Pickering NGS site. The Commission notes that the heavy water from other facilities, which contains tritium, would be stored in closed containers, with its separate tritium leak detection system, and in a completely different location (on the Pickering site) from the current leakage. The Commission further notes that OPG did report the leak under REGDOC 3.1.1<sup>5</sup>, and that the tritium releases have not exceeded action levels or regulatory limits. The Commission is satisfied with the current progress of OPG's investigation into this matter. The Commission is also confident that the regulations, programs and procedures currently in place will ensure that the tritium concentrations are below the licensing limits. Should the leak continue, the Commission will take appropriate actions.

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<sup>4</sup> CNSC CMD 16-M41, "Status Report on Power Reactors", August 17, 2016, Ottawa, Canada.

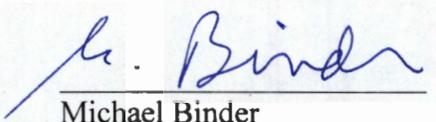
<sup>5</sup> Canadian Nuclear Safety Commission Regulatory Document 3.1.1 – *Reporting Requirements for Nuclear Power Plants*, May 2014.

21. The Commission notes that OPG intends, as evidenced in its application, that the heavy water will be stored temporarily at the Pickering site, while, for example, station(s) such as Darlington are offline during refurbishment activities.

#### 4.0 CONCLUSION

22. The Commission has considered the information and submissions from OPG, CNSC staff and intervenors and is satisfied that the requested licence amendment will not adversely impact the environment or the safety of the Pickering NGS operations.
23. The Commission notes that OPG did not provide the intervenor with its "5-Year Detritiation Plan" upon request, as stated in CMD 16-H111.3. The Commission strongly encourages OPG to share documentation with all interested stakeholders.
24. The Commission is satisfied that OPG is qualified to carry out the proposed activities. Therefore, the Commission, pursuant to Section 24 of the NSCA, amends the Pickering PROL to allow OPG at the Pickering NGS to possess, transfer, manage and store heavy water from other nuclear facilities.
25. Therefore, the Commission amends Part IV (vii) of the licence to read:

(vii) Possess, transfer, manage and store heavy water from other facilities.



Michael Binder  
President,  
Canadian Nuclear Safety Commission

SEP 29 2016

Date