



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Ontario Power Generation Inc.

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

Hearing Date December 18, 2015

RECORD OF PROCEEDINGS

Applicant: Ontario Power Generation Inc.

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

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

Application received: October 23, 2015

Date of hearing: December 18, 2015

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 a request to the Canadian Nuclear Safety Commission¹ (CNSC), under subsection 24(2) of the *Nuclear Safety and Control Act*² (NSCA), for an amendment to the Nuclear Power Reactor Operating Licence (PROL) for its Pickering Nuclear Generating Station (NGS) located in Pickering, ON. The current licence, PROL 48-01/2018, expires on August 31, 2018.
2. In March 2014, the Commission approved CNSC regulatory documents REGDOC 2.4.1, *Deterministic Safety Analysis*, and REGDOC 2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, for publication and use. These documents contain updated requirements related to multiple reactor units on a site, irradiated fuel bays, and cliff-edge effects to reflect the lessons learned from the Fukushima nuclear accident.
3. OPG requested that the Commission amend the Pickering NGS PROL to:
 - reflect the transition from CNSC regulatory document RD-310, *Safety Analysis for Nuclear Power Plants*, to REGDOC-2.4.1
 - reflect the transition from CNSC regulatory standard S-294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, to REGDOC-2.4.2

Issue

4. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the NSCA:
 - a) if OPG is qualified to carry on the activity that the amended licence would authorize; and
 - b) 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

5. 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 presented for a hearing based on written materials held on December 18, 2015 in Ottawa, Ontario. The Commission considered written submissions from OPG (CMD 15-H115.1) and CNSC staff (CMD 15-H115).

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 Statutes of Canada (S.C.) 1997, chapter (c.) 9.

2.0 DECISION

6. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*, the Commission concludes that OPG has met 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 48.01/2018, issued to Ontario Power Generation for its Pickering Nuclear Generating Station located in Pickering, ON. The amended licence, PROL 48.02/2018, is valid until August 31, 2018.

3.0 ISSUES AND COMMISSION FINDINGS

7. OPG requested that licence condition 5.1 of the Pickering NGS PROL be amended to replace references to regulatory documents as follows:
- In licence condition 5.1 (i), replace reference to CNSC regulatory document RD-310, *Safety Analysis for Nuclear Power Plants*, with CNSC regulatory document REGDOC-2.4.1, *Deterministic Safety Analysis*.
 - In licence condition 5.1 (ii), replace reference to CNSC regulatory standard S-294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, with CNSC regulatory document REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*.
8. In its submission, OPG provided the Pickering NGS transition plans for regulatory documents REGDOC-2.4.1 and REGDOC-2.4.2. The transition plans outline the changes required for implementing regulatory documents REGDOC-2.4.1 and REGDOC-2.4.2 and for remaining compliant with these regulatory documents once the transition is complete.
9. CNSC staff reported that the requirements and guidance in REGDOC-2.4.1 and REGDOC-2.4.2 are consistent with modern national and international practice, addressing issues and elements that control and enhance nuclear safety. In particular, they establish a more modern, risk-informed approach to the categorization of accidents that considers a full spectrum of possible events, including events of greatest consequence to the public.
10. CNSC staff stated that the amendment would align the requirements of Pickering NGS PROL licence condition 5.1 with the requirements of the Darlington NGS PROL, as well as with the safety analysis program requirements for the Bruce NGS.
11. CNSC staff also reported that it reviewed the application under the NSCA and found that,

given the nature of the proposed licence amendment, there are no impacts to the environment, the health and safety of persons or international security, and the licence amendment is consistent with Canada's international obligations. CNSC staff also reported that it will revise the Pickering Licence Conditions Handbook (LCH) to incorporate the implementation plans for REGDOC-2.4.1 and REGDOC-2.4.2. The LCH will also be reviewed to ensure that the compliance verification criteria and guidance provided reflect the updated requirements and guidance associated to the new regulatory documents.

Amendment to replace RD-310 with REGDOC-2.4.1

12. OPG explained that it will, by 2017, upgrade the Pickering safety reports to include a new appendix to address the development and analysis of common mode events. OPG stated that it will maintain a safety analysis program compliant with REGDOC-2.4.1 requirements beyond 2017, and that it will perform, to the extent practicable, any new Pickering specific safety analyses in accordance with the requirements of REGDOC-2.4.1. OPG stated that it will continue to utilize the existing OPG safety report update process to comply with the regulatory requirement to update safety reports periodically.
13. CNSC staff confirmed OPG's willingness to address the development and analysis of common mode events and, beyond 2017, to maintain a safety analysis program compliant with REGDOC-2.4.1 requirements. OPG intends to perform any new Pickering specific safety analyses in accordance with REGDOC-2.4.1. CNSC staff also confirmed that OPG will continue to utilize the existing OPG safety report update process to comply with the regulatory requirements to update safety reports periodically as set out in REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants*.
14. CNSC staff reported that it finds OPG's implementation plan acceptable since the current safety analysis provides an already comprehensive, systematic and conservative safety assessment of the Pickering NGS. CNSC staff reported that, with the approval of REGDOC-2.4.1, OPG has revised its implementation plan of RD-310 to define the REGDOC-2.4.1 compliant analyses to be undertaken in the 2014-2017 timeframe, which supersedes the previous RD-310 implementation plan. CNSC staff stated that it recommends replacing RD-310 with REGDOC-2.4.1.

Amendment to replace S-294 with REGDOC-2.4.2

15. OPG explained that, by the end of 2020, the Pickering A PSA and Pickering B PSA will be updated to be compliant with REGDOC-2.4.2. The Pickering A PSA update will be completed by the end of 2018, and the Pickering A risk estimates will be updated by the end of 2017; however, it is not intended to be a detailed risk re-quantification. The Pickering B PSA update will be completed by the end of 2017, including the detailed risk re-quantification. By 2020, the Pickering A and Pickering B PSA updates will address only the additional updated requirements of REGDOC-2.4.2 that go beyond S-294 requirements. OPG stated that the updated requirements of REGDOC-2.4.2 may be dealt

with through alternative methods to PSA for which guidance is currently being developed by industry. CNSC staff concurred with OPG. CNSC staff explained that the Pickering NGS is in compliance with the requirements of S-294, which include the enhancements required under the Fukushima Action Plan.

16. OPG stated that it is required to inform the Commission, by June 30, 2017, of its decision to continue or cease commercial operation of the Pickering A and B units beyond December 2020. Should a decision be made to operate the Pickering units beyond 2020, OPG stated that it will engage in further discussions with CNSC staff in 2017 regarding the requirements for the Pickering NGS PSA updates beyond 2020 to the new end of commercial operation date to ensure continued compliance with REGDOC-2.4.2.
17. CNSC staff also noted that REGDOC-2.4.2 will require that the licensee update its PSA on a five-year cycle instead of the current three-year cycle. CNSC staff explained having proposed this change in recognition of the extensive, detailed work involved in such updates and by the presence of other triggers, including design changes, that require specific updates to the PSA.
18. CNSC staff noted that OPG will update the Pickering A and B PSAs using a graded approach as permitted by REGDOC-2.4.2. CNSC staff reported having reviewed OPG's implementation plan for REGDOC-2.4.2 and that it found this request acceptable.

4.0 CONCLUSION

19. The Commission has considered the information and submissions from OPG and CNSC staff and is satisfied that the requested amendments are administrative in nature and will not adversely impact the safety of the Pickering NGS operations.



Michael Binder
President,
Canadian Nuclear Safety Commission

DEC 18 2015

Date