



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Decision

In the Matter of

Applicant Ontario Power Generation

Subject Application to Renew the Waste Facility
Operating Licence for the Western Waste
Management Facility

Public Hearing
Date April 12, 2017

RECORD OF DECISION

Applicant: Ontario Power Generation

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

Purpose: Application to renew the Waste Facility Operating Licence for the Western Waste Management Facility

Application received: May 16, 2016

Date of public hearing: April 12, 2017

Location: Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario

Members present: M. Binder, Chair
S. Demeter S. McEwan
S.A. Soliman R. Velshi

Secretary: M.A. Leblanc
Recording Secretary: P. McNelles
Senior General Counsel: L. Thiele

Applicant Represented By	Document Number
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D. Howe, Director, Western Waste Operations	CMD 17-H3.1A
A. Webster, Director, Nuclear Waste Operations Support	CMD 17-H3.1B
D. Witzke, Director, Nuclear Waste Engineering	
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CNSC staff	Document Number
R. Jammal, H. Tadros, K. Glenn, S. Oue, M. Rinker, K. Noble,	CMD 17-H3
A. McAllister, N.-O. Kwamena, C. Ducros, R. Lane, C. Cole,	CMD 17-H3.A
S. Djeffal and K. Sauvé	CMD 17-H3.B
Intervenors	Document Number
See appendix A	

Licence: Renewed

Table of Contents

1.0	INTRODUCTION.....	1
2.0	DECISION.....	3
3.0	ISSUES AND COMMISSION FINDINGS.....	4
3.1	Application of the <i>Canadian Environmental Assessment Act</i>.....	4
3.2	Management System.....	6
3.2.1	<i>Management System.....</i>	6
3.2.2	<i>Organization.....</i>	7
3.2.3	<i>Safety Culture.....</i>	7
3.2.4	<i>Conclusion on Management System.....</i>	8
3.3	Human Performance Management.....	8
3.3.1	<i>Human Performance Program.....</i>	8
3.3.2	<i>Personnel Training.....</i>	8
3.3.3	<i>Conclusion on Human Performance Management.....</i>	9
3.4	Operating Performance.....	9
3.4.1	<i>Conduct of Licensed Activity.....</i>	9
3.4.2	<i>Reporting and Trending.....</i>	11
3.4.3	<i>Conclusion on Operating Performance.....</i>	12
3.5	Safety Analysis.....	12
3.5.1	<i>Hazard Analysis.....</i>	13
3.5.2	<i>Deterministic Safety Analysis.....</i>	13
3.5.3	<i>Criticality Safety.....</i>	13
3.5.4	<i>Conclusion on Safety Analysis.....</i>	13
3.6	Physical Design.....	14
3.6.1	<i>Conclusion on Physical Design.....</i>	15
3.7	Fitness for Service.....	15
3.7.1	<i>Conclusion on Fitness for Service.....</i>	17
3.8	Radiation Protection.....	17
3.8.1	<i>Application of ALARA.....</i>	17
3.8.2	<i>Worker Dose Control.....</i>	18
3.8.3	<i>Radiation Protection Program Performance.....</i>	18
3.8.4	<i>Radiological Hazard Control.....</i>	19
3.8.5	<i>Estimated Dose to the Public.....</i>	19
3.8.6	<i>Conclusion on Radiation Protection.....</i>	19
3.9	Conventional Health and Safety.....	19
3.9.1	<i>Performance.....</i>	20
3.9.2	<i>Practices.....</i>	20
3.9.3	<i>Awareness.....</i>	21
3.9.4	<i>Conclusion on Conventional Health and Safety.....</i>	21
3.10	Environmental Protection.....	21
3.10.1	<i>Effluent and Emissions Control.....</i>	22
3.10.2	<i>Environmental Management System.....</i>	26
3.10.3	<i>Assessment and Monitoring.....</i>	26
3.10.4	<i>Protection of the Public.....</i>	27

3.10.5	<i>Environmental Risk Assessment</i>	28
3.10.6	<i>Conclusion on Environmental Protection</i>	30
3.11	Emergency Management and Fire Protection	31
3.11.1	<i>Nuclear Emergency Preparedness and Response</i>	31
3.11.2	<i>Fire Preparedness and Emergency Response</i>	32
3.11.3	<i>Conclusion on Emergency Management and Fire Protection</i>	32
3.12	Waste Management	32
3.13	Security	33
3.14	Safeguards and Non-Proliferation	35
3.15	Packaging and Transport	37
3.16	Aboriginal Engagement and Public Information	38
3.16.1	<i>Aboriginal Engagement</i>	38
3.16.2	<i>Public Information</i>	41
3.17	Decommissioning Plan and Financial Guarantee	42
3.18	Cost Recovery	43
3.19	Nuclear Liability Insurance	43
3.20	Improvement Plan and Significant Future Activities	44
3.21	Licence Length and Conditions	44
4.0	CONCLUSION	45
Appendix A – Intervenors		A

1.0 INTRODUCTION

1. Ontario Power Generation Inc. (OPG) has applied to the Canadian Nuclear Safety Commission¹ for the renewal of the Waste Facility Operating Licence (WFOL) for its Western Waste Management Facility (WWMF) located in the Municipality of Kincardine, Ontario. The current operating licence, W4-314.03/2017, expires on May 31, 2017. OPG requested a renewal of the licence for a period of ten years, from June 1, 2017 to May 31, 2027.
2. The WWMF is located on approximately 19 of the 932 hectares that is the site of the Bruce Nuclear Power Development (BNPD) on the shores of Lake Huron, within the Municipality of Kincardine. The entire BNPD site is owned by OPG. The majority of the site was leased to Bruce Power Inc. (Bruce Power) in May 2001. OPG is the owner and licensed operator of the WWMF within the BNPD site.
3. The WWMF includes both the Low and Intermediate Level Waste (L&ILW) Storage Facility and the Used Fuel Dry Storage Facility (UFDSF). The L&ILW Storage Facility consists of the Waste Volume Reduction Building, the Transportation Package Maintenance Building, 14 above-ground Low Level Storage Buildings (LLSBs), two above-ground refurbishment waste storage buildings, and various in-ground containers, trenches and tile holes for intermediate-level radioactive waste (ILW) storage. The UFDSF processes and stores dry storage containers (DSCs) containing used nuclear fuel solely from the Bruce Nuclear Generating Station (BNGS).
4. The WWMF licence authorizes OPG to operate the safe handling, management, and the interim storage of radioactive wastes, including L&ILW, from all 20 reactors located at the Bruce, Darlington and Pickering sites, and the used nuclear fuel produced by the BNGS. OPG has developed the WWMF site in stages since 1974, with additional structures to accommodate wastes produced during reactor operation, maintenance and refurbishment. The WWMF licence also authorizes OPG to receive low-level radioactive waste from the Darlington, Pickering and Bruce nuclear generating stations to the Waste Volume Reduction Building. Furthermore, the current WWMF licence authorizes the construction of an additional nine storage buildings for L&ILW, 108 in-ground storage containers for intermediate-level radioactive waste, 20 in-ground containers for heat exchangers, and two DSC storage buildings. This authorization was issued by the Commission in 2007.²
5. The existing WWMF licence allows OPG to construct and operationalize waste storage structures. While some of the approved structures have been constructed, OPG has requested that activities already approved in the current licence be carried over into the renewed licence. These activities include the construction and operation of:

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 Canadian Nuclear Safety Commission Record of Decision – *Application to Renew the Operating Licence for the Western Waste Management Facility*, April 11, 2007, Ontario Power Generation.

- 5 storage buildings for low- and intermediate-level waste (L&ILW SBs)
 - 54 in-ground containers (IC-18s)
 - 20 in-ground containers for heat exchangers (IC-HXs)
6. By this renewal application, OPG is also requesting approval for construction and operation of the following new storage structures adjacent to the current WWMF area within the Bruce Power site boundary:
- 4 storage buildings for used dry fuel (UFDSBs)
 - 6 storage buildings for low- and intermediate-level waste (L&ILW SBs)
 - 216 in-ground containers (IC-18s)
 - 10 in-ground containers for heat exchangers (IC-HXs)
 - 1 large object processing building
 - 1 waste sorting building

The new structures would provide additional storage capacity for used nuclear fuel and L&ILW, as well as processing facilities to manage the wastes.

7. In addition, OPG is requesting that the Commission authorize the consolidation of the licensed activities of import and export of nuclear substances, currently authorized under OPG's Nuclear Substances and Radiation Devices Licence No. 12861-15-19.0, into the proposed WWMF licence.

Issue

8. In considering the application, the Commission is 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 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.

Public Hearing

9. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to review the application. The President of the Commission authorized R. Velshi to participate in this hearing, as she became engaged with this matter while still holding office as a member of the Commission. The Commission, in making its decision, considered information presented for a public hearing held on April 12, 2017 in Ottawa, Ontario. The public hearing was conducted in accordance

with the *Canadian Nuclear Safety Commission Rules of Procedure*.³ During the public hearing, the Commission considered written submissions and heard oral presentations from OPG (CMD 17-H3.1) and CNSC staff (CMD 17-H3). The Commission also considered oral and written submissions from 18 intervenors (see Appendix A for a list of interventions). The hearing was webcast live via the CNSC website, and video archives are available for a three-month period following the hearing.

2.0 DECISION

10. 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 is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that OPG, in carrying on 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, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the Waste Facility Operating Licence issued to Ontario Power Generation Inc. for its Western Waste Management Facility located in Kincardine, Ontario. The renewed licence, WFOL-W4-314.00/2027, is valid from June 1, 2017, until May 31, 2027, unless suspended, amended, revoked or replaced.

11. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 17-H3.
12. The Commission authorizes the consolidation of the licensed activities of import and export of nuclear substances from OPG's Nuclear Substances and Radiation Devices Licence No. 12861-15-19.0 into the proposed WWMF licence. The Commission concurrently amends OPG's Nuclear Substances and Radiation Devices Licence No. 12861-15-19.0. to remove the reference to the Western Waste Management Facility located in Appendix: Locations of Licensed Activities, of that licence.
13. The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.
14. The Commission authorizes the construction activities as outlined in the proposed licence. OPG is to submit to CNSC staff an environmental management plan, construction verification plan, and the project design requirements prior to the commencement of construction activities, as contemplated in licence condition 15.1.
15. The Commission takes notice of OPG's commitment to submit to CNSC staff a report confirming the need for any of the proposed structure(s) for which the necessity of that

³ Statutory Orders and Regulations (SOR)/2000-211.

structure(s) is contingent upon future regulatory and licensing decisions that may occur during the WWMF licence period, prior to the commencement of construction activities. Under CNSC staff's proposed licence condition 15.2, for the structures listed in Table 2 of Appendix A of the licence, the Commission will first have to accept a commissioning report submitted by OPG, before operation may commence. With respect to the structures listed in Table 3 of Appendix A, the Commission by this decision delegates the acceptance of a commissioning report as recommended in section 4.11 of CMD 17-H3, to the staff positions there listed.

16. The Commission accepts the delegations of authority as recommended in section 4.11 of CMD 17-H3, except in the case of the acceptance of the commissioning report for the structures list in Table 2 of Appendix A of the licence, as detailed in the above paragraph.
17. The Commission also wishes to make it clear, and to address the concerns raised by the Saugeen Ojibway Nation (SON), that this licence is not prejudging the outcome of future regulatory decisions pertaining to waste management at the Bruce NGS site.
18. With this decision, the Commission directs CNSC staff to report annually on the performance of the WWMF as part of an annual *Regulatory Oversight Report*. CNSC staff shall present this report at a public proceeding of the Commission, where members of the public will be able to participate.

3.0 ISSUES AND COMMISSION FINDINGS

19. In making its licensing decision, the Commission considered a number of issues relating to OPG's qualification to carry out the proposed activities and the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.

3.1 Application of the *Canadian Environmental Assessment Act*

20. In coming to its decision, the Commission was first required to determine whether an Environmental Assessment (EA) under the *Canadian Environmental Assessment Act of 2012*⁴ (CEAA, 2012), was required.
21. The application is for a licence renewal, to include the authorization for the construction of additional structures. The Commission notes that licence renewal is not designated as a project under CEAA, 2012. With respect to the proposed new construction, the Commission is satisfied that none of the additional activities sought to be authorized amount to a project as designated in the Schedule to the *Regulations Specifying Physical Activities*.⁵ In particular,

⁴ *Canadian Environmental Assessment Act*, 2012 (S.C. 2012, c. 19, s. 52)

⁵ *Regulations Designating Physical Activities* (SOR/2012-147)

- Section 34 of the Schedule relates to the expansion of a facility for processing certain isotopes, a manufacturing facility or other processing facility, and the WWMF is not such a facility. Thus, section 34 is not engaged.
 - The WWMF is not a facility for long-term management and disposal of irradiated fuel or nuclear waste, as it is an interim storage facility. Thus, section 38 is not engaged.
22. The Commission notes that two previous EAs were performed in 2003 and 2006, respectively, under the prior *Canadian Environmental Assessment Act, 1992*⁶ (CEAA, 1992), regarding the preparation, construction and operation of additional facilities at the WWMF. In 2006, the Commission concluded that the EAs performed adequately assessed the potential environmental impacts, that the construction project, taking into account the implementation of mitigation measures, was not likely to cause significant adverse environmental effects, and that all applicable requirements of CEAA 1992 were satisfied.⁷
23. CNSC staff reported that an EA was conducted under the NSCA for this licence renewal. CNSC staff's findings from that EA include, but are not limited to:
- OPG's environmental protection programs meet CNSC regulatory requirements.
 - OPG's PEA assessed the potential environmental (ecological and human health) effects from the WWMF emissions and complies with CSA N288.6-12.
 - The results of the CNSC IEMP confirm that the public and the environment in the vicinity of the WWMF site are protected from any harmful effects associated with releases from the site.
24. The Commission noted that the WWMF is within the larger Bruce Power NGS site, and asked CNSC staff to explain how they separate the effects of each facility when performing the EA. CNSC staff reported that there are specific monitoring programs dedicated to monitoring each of the facilities, therefore the specific releases from each facility are accounted for. CNSC staff stated that the IEMP considers specific radionuclides and effluent streams at each site, and that site-wide ERAs are also performed. CNSC staff added that the total dose to the public includes the doses from the WWMF and the Bruce Power NGS, however the proportion of the total dose from the WWMF is calculated. CNSC staff noted that the essential aspect is the protection of the public regarding the overall public dose, not the dose rate from each individual site.

⁶ *Canadian Environmental Assessment Act* (S.C. 1992, c. 37)

⁷ CNSC Record of Proceedings, Including Reasons for Decision: *Environmental Assessment of the Construction and Operation of the Western Waste Management Facility Refurbishment Waste Storage Project*, March 2006.

25. Addressing the effects of the total suspended solid values on aquatic life, CNSC staff reported that this is an intermittent stressor due to the freezing and thawing of the water, and that the environment is usually able to recover quickly, in comparison with a more frequent stressor. CNSC staff noted that it is hard to predict if any residual damage from the intermittent stressor will occur.
26. The Commission considered the results of past EAs performed under CEAA 1992, the EA performed under the NSCA, and is satisfied that an EA under CEAA 2012 is not required as the *Regulations Designating Physical Activities* does not apply to this licence renewal application. The Commission considers the environmental review that was conducted by CNSC staff to be acceptable and thorough. The Commission notes that the NSCA provides a strong regulatory framework for environmental protection. Whether an EA under CEAA 2012 is required or not, the CNSC regulatory system ensures that adequate measures are in place to protect the environment and human health in accordance with the NSCA and its Regulations.

3.2 Management System

27. The Commission examined OPG's Management System which covers the framework that establishes the processes and programs required to ensure that the WWMF achieves its safety objectives and continuously monitors its performance against these objectives, and fosters a healthy safety culture. Based on information submitted by OPG and CNSC staff, the Commission considered the following specific areas of this safety and control area (SCA):
 - Management System
 - Organization
 - Safety Culture

CNSC staff rated the WWMF performance in this SCA for the period of 2007-2016 as satisfactory.

3.2.1 Management System

28. The Commission considered OPG's management system documents and CNSC staff's verification of whether OPG's management system is implemented in accordance with CNSC regulatory requirements. OPG informed the Commission that the WWMF performs detailed audits and monitoring of its management system in order to provide for continuous improvements of that management system, and to ensure the safe and reliable operation of the WWMF. OPG added that the WWMF's management system is compliant with the requirements of CSA standard N286-12, *Management system requirements for nuclear facilities*⁸ and ensures that this facility meets its safety objectives. CNSC staff informed the Commission regarding their inspections and

⁸ CSA Group – CSA N286-12, *Management system requirements for nuclear facilities*, 2012.

desktop reviews during the current licence period, and stated that OPG had addressed inspection findings in a timely and satisfactory manner and took all appropriate corrective actions. CNSC staff confirmed that OPG's management system for the WWMF complies with the CSA N286-12 standard.

3.2.2 Organization

29. The Commission assessed the information provided by OPG and CNSC staff regarding the organizational structure at the WWMF, the responsibilities and day-to-day operations of that facility, and changes to the organizational model used by OPG during the current licence period. OPG informed the Commission that these changes allow for best practices to be implemented at all of OPG's licensed sites, and that the WWMF receives direct support from OPG's central management functions. CNSC staff stated that a thorough review of OPG's revised organizational structure was performed, and CNSC staff concluded that these changes did not impact the safe conduct of licenced activities.

3.2.3 Safety Culture

30. The Commission considered the information regarding the safety culture at the WWMF. OPG informed the Commission that it routinely monitors its nuclear safety culture through the use of Nuclear Safety Culture Monitoring Panels as established in the Nuclear Energy Institute's (NEI) best practice document NEI-09-07, *Fostering a Strong Nuclear Safety Culture*.⁹ OPG stated that these panels examine the information from the safety culture programs in order to identify the areas of strength and the areas for focused attention within the organization. OPG added that, in 2015, a Nuclear Safety Culture Assessment was performed and the results showed that the OPG Nuclear Waste Management group had a healthy safety culture. The assessment identified areas for improvement, and the next assessment will take place in 2018. CNSC staff informed the Commission that, based on their review, CNSC staff is of the opinion that OPG's management system and supporting documents related to safety culture are adequate to monitor, foster and continually improve the safety culture at the WWMF. CNSC staff added that the establishment of the safety culture monitoring panel meets CNSC requirements.
31. Asked if the Power Workers' Union had raised any safety concerns with OPG management with respect to the WWMF, the OPG representative responded that OPG works in collaboration with the Union, and that there are processes for Union members to raise safety concerns, as part of the safety culture at the facility. The OPG representative added that there are joint working groups between the Union and management in order to work through any concerns that may arise.

⁹ Nuclear Energy Institute – NEI-09-07, *Fostering a Healthy Nuclear Safety Culture*, March, 2014.

3.2.4 Conclusion on Management System

32. Based on its consideration of the presented information, the Commission concludes that OPG has appropriate organization and management structures in place, and that the operating performance at the WWMF in the current licence period provides a positive indication of OPG's ability to adequately carry out the activities under the proposed renewed licence.

3.3 Human Performance Management

33. Human performance management encompasses activities that enable effective human performance through the development and implementation of processes that ensure licensee staff is sufficient in number in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties. The Commission's consideration of this SCA includes the following specific areas:
 - Human performance program
 - Personnel training

CNSC staff evaluated the WWMF performance related to this SCA and rated it as satisfactory for the period 2007-2016.

3.3.1 Human Performance Program

34. The Commission considered the tools developed by OPG to reduce error, establish and maintain defences, identify and resolve organizational weaknesses, identify and respond to error precursors, and to identify and implement necessary improvements. OPG informed the Commission that the Human Performance Program at the WWMF includes the key behavioral expectations regarding worker activities, supervisory activities, behavioral improvement, and the reporting and evaluation activities used to assess performance and identify areas for improvement. CNSC staff informed the Commission that the proposed licence is the first licence for the WWMF to specify a requirement to implement and maintain a human performance program, and that the goal of that program is to continually reduce the frequency and severity of events through the systematic reduction of human error and the management of defences. CNSC staff has assessed OPG's Human Performance Program and find that it meets requirements. CNSC staff added that, as part of ongoing regulatory oversight activities, CNSC staff will assess the implementation of the Human Performance Program at the WWMF.

3.3.2 Personnel Training

35. The Commission assessed OPG's personnel training programs to determine if they meet regulatory requirements. OPG informed the Commission that OPG's Nuclear Training Program is used to develop and maintain competent personnel in order to

ensure the safe operation of the WWMF. OPG provided an overview of general and job-specific training, and stated that the WWMF is fully compliant with the requirements stated in REGDOC-2.2.2, *Personnel Training*.¹⁰ CNSC staff advised the Commission that OPG has a well-documented Systematic Approach to Training (SAT), and noted that OPG's training programs are appropriate for the activities conducted at the WWMF. CNSC staff informed the Commission that an inspection of personnel training occurred at the WWMF in May 2016, and that, overall, CNSC staff was satisfied with the results of that inspection and with the corrective action plan to address the minor deficiency that was uncovered. CNSC staff stated that they would continue to monitor the training and qualification program at the WWMF and, based on their assessment, CNSC staff is of the view that the WWMF meets the expectations for personnel training.

3.3.3 Conclusion on Human Performance Management

36. Based on its consideration of the presented information, the Commission concludes that OPG has appropriate programs in place and that current efforts related to human performance management provide a positive indication of OPG's ability to adequately carry out the activities under the proposed licence.

3.4 Operating Performance

37. Operating performance includes an overall review of the conduct of the licensed activities and the activities that enable effective performance as well as improvement plans and significant future activities at the WWMF. CNSC staff reviewed the following specific areas encompassed by this SCA:

- Conduct of licensed activity
- Reporting and trending

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2010 and fully satisfactory for the period 2011-2016.

3.4.1 Conduct of Licensed Activity

38. The Commission considered the operating practices of the WWMF. OPG submitted that it operates and manages the WWMF in accordance with the licensing basis and applicable standards. OPG stated that procedures are utilized in all aspects of the WWMF operation, including providing direction on the waste that is acceptable for processing storage, as detailed in the WWMF licensing basis. OPG provided to the Commission an overview of the performance of the WWMF, new component installations, qualification and testing, production history and plans for future improvements. OPG also provided details on the implementation in 2016 of the Work

¹⁰ Canadian Nuclear Safety Commission Regulatory Document – REGDOC-2.2.2, *Personnel Training*, December, 2016.

Management process, which is intended to reduce events and improve productivity, component reliability and system availability. CNSC staff reported that the implementation of OPG's WWMF operations programs provides safe and secure facility operation with adequate regard for health, safety, security, radiation protection, environmental protection, and Canada's international obligations. CNSC staff provided additional information regarding the waste operations and future construction activities at the WWMF.

39. CNSC staff informed the Commission that OPG possesses a Nuclear Substances and Radiation Devices Licence #12861-15-19.0 that authorizes OPG to send contaminated laundry from the WWMF to the United States to be laundered and returned to the WWMF. CNSC staff stated that OPG is requesting the consolidation of the licensed activities of import and export of nuclear substances from their Nuclear Substances and Radiation Devices Licence with the proposed WWMF licence renewal. CNSC staff confirmed that these activities will continue to be limited to contaminated materials other than controlled nuclear substances as defined in the *Nuclear Non-Proliferation Import and Export Control Regulations*.¹¹
40. On the proposed construction of new facilities or structures as listed on Table 2 in Appendix A of the licence, the Commission asked if there was a distinction between the requirement for approval before construction, or approval before commissioning. The SON representative responded that it would be optimal if Commission approval was required prior to the commencement of construction activities, as opposed to prior to the commissioning of new facilities, as it more fully addresses the concerns of the SON. However, the SON representative also noted that the SON had asked that a hold point be set at a minimum at the construction stage or at the commissioning stage, prior to operation.
41. Asked if the inclusion of a hold point for proposed construction activities would be beneficial to the relations between the SON, CNSC and OPG, the SON representative responded that the inclusion of a hold point would be empowering and of great importance to First Nations peoples, who historically felt disenfranchised with the use and regulation of nuclear technology within their territory.
42. Clarifying its position on the hold point for the commissioning of the proposed new buildings, CNSC staff reported that it is recommending to the Commission that a hold point be placed on the commissioning of new buildings, based on the acceptance of the commissioning reports. CNSC staff stated that the designs for these buildings are very similar to the existing structures; therefore the expectation for OPG is to implement the latest versions of codes and standards, as well as to ensure the protection of the environment, which CNSC staff will verify.
43. The Commission noted the commitment by OPG to not commence any construction activities of structures linked to future regulatory processes (i.e. the proposed Deep Geological Repository for ILW and LLW) unless OPG can demonstrate the necessity

¹¹ *Nuclear Non-proliferation Import and Export Control Regulations* (SOR/2000-210)

for such structures in light of developments regarding the status of ILW and LLW.

44. The Commission asked about the time required to construct the proposed structures. The OPG representative responded that the total project cycle is approximately five years, and the actual construction portion would take about eighteen months.
45. Asked about the assessments for the two potential locations where the proposed new structures would be constructed, the OPG representative stated that both locations are considered in the predictive effects assessment (PEA), and that OPG is seeking approval to construct these structures at both locations.
46. On the division of work between Bruce Power and OPG with respect to the dry storage process, Bruce Power provided an overview of their commercial arrangement with OPG and their spent fuel storage process on site, and stated that the spent fuel is later shipped to the WWMF. The Bruce Power representative added that there is a large amount of shared operational experience and that there is clear responsibility with respect to fuel transfer. The OPG representative provided an overview of its procedures and obligations regarding fuel storage, transfer, and radiation protection, and stated that there is a detailed documentation process to ensure each party meets its commitments. The Commission notes that there will be collaboration between OPG and Bruce Power at the WWMF throughout the proposed new construction activities and the total life of the facility.
47. Regarding the spike in the value for the total stored activity that occurred in 2008, CNSC staff reported that this spike was due to an increase in the low-level waste (LLW) volume from the Bruce A refurbishment project. The OPG representative added that this spike was also due to intermediate-level waste (ILW), in the form of retube waste components. The Commission noted that these values represent annual storage as opposed to cumulative storage.
48. On the storage of liquid waste at the WWMF, the OPG representative reported that there is a small volume of liquid waste oil that is stored within a dyked area before it is incinerated, and that other liquid waste products are solidified at the nuclear power plants before being transported to the WWMF.

3.4.2 Reporting and Trending

49. CNSC staff informed the Commission that it verified that OPG's program for reporting to the Commission with respect to the activities at the WWMF exceeds regulatory requirements. CNSC staff stated that, during the reporting period, no significant events occurred and no Event Initial Reports (EIRs) were presented to the Commission. CNSC staff stated that there were forty-one low safety-significant reportable events at the WWMF; however, there were no adverse effects on the health and safety of persons or the environment, and OPG took all corrective action when necessary. CNSC staff is of the opinion that OPG's reporting and implementation of corrective actions is satisfactory. The Commission notes that sections 29 and 30 of the *General Nuclear*

*Safety and Control Regulations*¹² outline the specific scenarios under which a licensee must file a report to the Commission, including the information that is relevant to that event.

3.4.3 Conclusion on Operating Performance

50. Based on the above information, the Commission concludes that the operating performance at the WWMF during the current licence period provides a positive indication of OPG's ability to carry out the activities under the proposed licence.
51. The Commission authorizes the construction activities as outlined in the proposed licence. OPG is to submit to CNSC staff an environmental management plan, construction verification plan, and the project design requirements prior to the commencement of construction activities, as contemplated in licence condition 15.1.
52. The Commission takes notice of OPG's commitment to submit to CNSC staff a report confirming the need for any of the proposed structure(s) for which the necessity of that structure(s) is contingent upon future regulatory and licensing decisions that may occur during the WWMF licence period, prior to the commencement of construction activities. Under CNSC staff's proposed licence condition 15.2, for the structures listed in Table 2 of Appendix A of the licence, the Commission will first have to accept a commissioning report submitted by OPG, before operation may commence. With respect to the structures listed in Table 3 of Appendix A, the Commission by this decision delegates the acceptance of a commissioning report as recommended in section 4.11 of CMD 17-H3, to the staff positions there listed.

3.5 Safety Analysis

53. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or the operation of a facility, and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. It supports the overall safety case for the facility. CNSC staff reviewed the following specific areas encompassed by this SCA:
 - Deterministic Safety Analysis
 - Hazard analysis
 - Criticality safety

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2010 and fully satisfactory for the period 2011-2016.

¹² *General Nuclear Safety and Control Regulations* (SOR/2000-202)

3.5.1 Hazard Analysis

54. OPG informed the Commission that Fire Hazard Analyses (FHA) were completed for all LLW and ILW facilities at the WWMF, and all recommendations have been implemented or planned for execution. CNSC staff confirmed that OPG performed these FHAs and is implementing the recommendations from the FHAs in accordance with the corrective action plan. CNSC staff is monitoring OPG's corrective action work and is satisfied with OPG's progress to date. CNSC staff informed the Commission that fire protection compliance inspections were conducted in October 2009 and March 2013 and that, based on those inspections, CNSC staff is of the view that the fire protection program at the WWMF meets regulatory requirements and the overall condition of the facility is satisfactory with respect to fire protection.

3.5.2 Deterministic Safety Analysis

55. OPG informed the Commission that deterministic safety analysis methods are employed to assess the overall safety of the WWMF, and that worst-case accident scenarios have been identified. OPG stated that the results of the safety analysis were used to update the Safety Report and the Safety Design Envelope, and that the Safety Report is reviewed every five years and revised as necessary to incorporate new information from assessments and operational experience. CNSC staff confirmed that OPG conducted several assessments, including an environmental risk assessment, to ensure the safety of the WWMF operations. CNSC staff informed the Commission that the most recent safety report for the WWMF was reviewed in 2012, and CNSC staff considered it to be acceptable. The Commission recognizes that licence condition 4.2 of the proposed licence requires OPG to implement and maintain a safety analysis report. The Commission notes that the next revision of the WWMF safety report is due in 2017.

3.5.3 Criticality Safety

56. OPG informed the Commission that criticality assessments have been completed for the used fuel stored in the DSCs at the WWMF. Those assessments have demonstrated that there can be no criticality of spent fuel under normal conditions or under any postulated accident scenario at the WWMF. CNSC staff confirmed that the spent fuel currently stored at the WWMF cannot become critical in air or in water; therefore OPG is not required to maintain a nuclear criticality safety program for the WWMF.

3.5.4 Conclusion on Safety Analysis

57. On the basis of the information presented, the Commission concludes that the systematic evaluation of the potential hazards and the preparedness for reducing the effects of such hazards is adequate for the operation of the WWMF and the activities under the proposed licence.

3.6 Physical Design

58. Physical design includes activities to design the systems, structures and components to meet and maintain the design basis of the 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. CNSC staff reviewed the following specific areas encompassed by this SCA:

- Design Governance
- Facility Design
- Structure Design
- System Design
- Component Design

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2016. These specific areas will be discussed concurrently in this section.

59. OPG informed the Commission that its Nuclear Waste Management program has robust processes to ensure that the physical design of the WWMF complies with the licensing basis and safety case. OPG stated that all engineering activities, facility operations, and any changes made to the facility/facility operations are implemented using procedures and work instructions that satisfy the WWMF operating licence, safety envelope, and meet all regulatory requirements.
60. CNSC staff informed the Commission that OPG's implementation of physical design SCA requirements in accordance with CNSC regulatory requirements was evaluated through various compliance activities. CNSC staff confirmed that OPG has a formal service agreement with the Technical Standards and Safety Authority as the Authorized Inspection Agency, and CNSC staff also confirmed that OPG's pressure boundary program complies with CNSC regulatory requirements. CNSC staff stated that OPG continues to submit third party reviews with respect to its fire protection program, to provide confirmation that compliance criteria are met, and CNSC staff is of the view that these third party reviews meet regulatory requirements. CNSC staff informed the Commission that it assessed OPG's documentation and analyses under this SCA, and found them acceptable.
61. The Commission recognizes that OPG would be compliant with the following new/updated codes and standards for any new designs at the WWMF under the proposed licence and LCH:
- CSA N393-13, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances*¹³

¹³ CSA Group – CSA N393-13, *Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances*, 2013

- CSA N285.0-08 (Updates 1 and 2; and 2012 Annex N), *General Requirements for Pressure Retaining Systems and Components for CANDU Nuclear Power Plants*¹⁴
- NRCC NBCC (2010), *National Building Code of Canada*¹⁵
- NRCC NFCC (2010), *National Fire Code of Canada*¹⁶
- ASME B31.1 (2010), *Power Piping*¹⁷
- B15-09 (2009 and Update 1), *Boiler, Pressure Vessel and Pressure Piping Code*¹⁸

62. Regarding the need for seismic qualification for the structures at the WWMF, the OPG representative informed the Commission that the structures at the WWMF were built in accordance with the NBCC, and that there is no requirement for these buildings to be seismically qualified. The OPG representative stated that this was documented in the safety report and reviewed again after the Fukushima accident, and added that, if the structure were to collapse on the storage containers, the release to the public would be minimal. CNSC staff reported that the NBCC has its own requirements for seismic capability, so the WWMF structures will withstand seismic events based on that code. CNSC staff stated that the WWMF structures are not qualified to design basis earthquakes or review level earthquakes, as those requirements are reserved for nuclear power plants. The Commission notes that all structures at the WWMF are compliant with the NBCC.

3.6.1 Conclusion on Physical Design

63. On the basis of the information presented, the Commission concludes that the design of the WWMF is adequate for the operation period included in the proposed licence.

3.7 Fitness for Service

64. Fitness for Service covers activities that are performed to ensure the systems, components and structures at the WWMF continue to effectively fulfill their intended purpose. CNSC staff reviewed the following specific areas encompassed by this SCA:

- Equipment Reliability
- Maintenance
- Structural Integrity
- Aging Management

¹⁴ CSA Group – CSA N285.0-08, *General Requirements for Pressure Retaining Systems and Components for CANDU Nuclear Power Plants*, 2008

¹⁵ National Research Council Canada – *National Building Code of Canada*, 2010, < http://www.nrc-cnrc.gc.ca/eng/publications/codes_centre/2010_national_building_code.html>.

¹⁶ National Research Council Canada – *National Fire Code of Canada*, 2010, < http://www.nrc-cnrc.gc.ca/eng/publications/codes_centre/2010_national_fire_code.html>.

¹⁷ American Society of Mechanical Engineers – ASME B31.1, *Power Piping*, 2010.

¹⁸ CSA Group – B51-09, *Boiler, Pressure Vessel and Pressure Piping Code*, 2009.

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2016. These specific areas will be discussed concurrently in this section.

65. OPG advised the Commission of its commitment to maintain all of the systems, structures, equipment and components that are important to safety and reliability at the WWMF, and that the implementation of OPG's reliability and aging management programs ensure the continued fitness-for-service for those systems. OPG stated that, under OPG's equipment reliability program, system performance monitoring is performed on critical WWMF systems in order to trend the system performance data and initiate investigations or maintenance activities. OPG added that both preventive maintenance activities and corrective maintenance activities are planned and executed, and that the structural integrity of all the waste storage containers at the site is monitored in order to protect the health and safety of persons and the environment.
66. CNSC staff informed the Commission that, through inspections and desktop reviews, CNSC staff have confirmed that OPG maintains all of the structures and supporting infrastructure in accordance with expectations and regulatory requirements, and verified that the WWMF is currently in compliance with CNSC regulatory document RD-334, *Aging Management for Nuclear Power Plants*.¹⁹ CNSC staff assessed that OPG carries its aging management activities in accordance with the integrated aging management program and has implemented plans to address plausible aging mechanisms in the waste storage containers, and that OPG's fire protection system meet the requirements of the *National Fire Code of Canada* and NFPA standard 801.²⁰ CNSC staff informed the Commission that, based on its assessment of OPG's documentation, CNSC staff is of the view that OPG has adequate programs and activities in place to monitor aging and maintain the systems, structures and components at the WWMF.
67. The Commission notes that the WWMF will be compliant with REGDOC-2.6.3, *Aging Management*²¹ by July 15, 2017, and will be compliant with the aforementioned CSA standard N393-13 by September 15, 2017.
68. Addressing the contingency plans for the replacement of aging structures or facilities, the OPG representative reported that OPG has an extensive aging management program for the WWMF, will continue to monitor the fitness for service of all systems, structures and components, and will enact the contingency plans if necessary. OPG stated that, if waste is to be stored at the WWMF for longer than originally intended, the service life of the structures could be extended up to certain limits and, if necessary, waste would be retrieved and transferred to new structures. Regarding the Rad Waste

¹⁹ Canadian Nuclear Safety Commission Regulatory Document, RD-334, *Aging Management for Nuclear Power Plants*, June, 2011.

²⁰ National Fire Protection Association, NFPA 801, *Standard for Fire Protection for Facilities Handling Radioactive Materials*, 2014.

²¹ Canadian Nuclear Safety Commission Regulatory Document, REGDOC-2.6.3, *Aging Management*, March, 2014.

Operation Site 1 (RWOS 1), the OPG representative stated that the vast majority of that waste was removed previously, and the remaining waste is scheduled to be removed starting in 2019.

3.7.1 Conclusion on Fitness for Service

69. The Commission is satisfied with OPG's programs for the inspection and life-cycle management of key safety systems. Based on the above information, the Commission concludes that the equipment as installed at the WWMF is fit for service.

3.8 Radiation Protection

70. As part of its evaluation of the adequacy of the measures for protecting the health and safety of persons, the Commission considered the past performance of OPG in the area of radiation protection. The Commission also considered the radiation program at the WWMF to ensure that both radiation doses to persons and contamination are monitored, controlled and kept as low as reasonably achievable (ALARA), with social and economic factors taken into consideration. CNSC staff reviewed the following specific areas encompassed by this SCA:

- Application of ALARA
- Worker dose control
- Radiation protection program performance
- Radiological hazard control
- Estimated dose to public

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2016.

71. CNSC staff noted that OPG had implemented and maintained an effective radiation protection program (RPP) as required by the *Radiation Protection Regulations*,²² and that no worker or member of the public had received a radiation dose in excess of regulatory limits as a result of the licensed activities conducted at the WWMF.

3.8.1 Application of ALARA

72. OPG informed the Commission that the RPP at the WWMF was implemented in accordance with a series of standards and procedures, including the objective of keeping the collective doses ALARA. OPG added that annual reviews are performed on WWMF ALARA targets, and that the facility design and RPP elements were developed to fulfill the ALARA principle. CNSC staff informed the Commission that the RPP implemented at the WWMF was developed in-line with CNSC regulatory guide G-129, *Keeping Radiation Exposures and Doses "As Low as Reasonably*

²² *Radiation Protection Regulations* (SOR/2000-203)

*Achievable (ALARA)*²³. CNSC staff stated that OPG's RPP at the WWMF was assessed, and confirmed that OPG integrates ALARA into planning, scheduling, and work control. OPG also establishes and monitors performance against ALARA targets for work conducted at the WWMF. CNSC staff stated that they are of the view that the WWMF is in compliance with regulatory expectations and requirements to ensure that radiation exposures are maintained ALARA.

3.8.2 Worker Dose Control

73. OPG informed the Commission that limiting individual worker doses is one of the processes of the RPP at the WWMF, and that during the reporting period there were no action level exceedances related to worker doses. OPG stated that the exposure control program at the WWMF ensures that worker doses were consistently below the regulatory limits set out in the *Radiation Protection Regulations*, and that OPG is in full compliance with regulatory requirements. OPG added that enhanced radiological contamination monitoring equipment has been procured and installed at the WWMF, including a new whole body counter for employee internal dose monitoring. CNSC staff informed the Commission that OPG uses CNSC licensed dosimetry services to monitor, assess, record and report employee, visitor and contractor doses at the WWMF, as established in the RPP. CNSC staff stated that OPG uses a combination of processes and procedures to control and limit worker doses, and that CNSC staff is of the opinion that OPG's worker dose control program is in compliance with regulatory requirements at the WWMF.

3.8.3 Radiation Protection Program Performance

74. OPG informed the Commission that a corporate-wide radiation protection audit was completed in 2015, and that no major non-conformances specific to the WWMF were found. CNSC staff confirmed that there were no action level exceedances, as well as no contamination control events in excess of OPG's contamination control action level for the WWMF. CNSC staff informed the Commission that OPG's RPP at the WWMF was assessed using multiple compliance activities, including inspections and the desktop reviews of compliance reports. CNSC staff is satisfied with improvements made by OPG to their RPP based on the results of those compliance activities and stated that the corrective actions taken by OPG were acceptable in all cases. CNSC staff added that the aforementioned procurement of additional radiation monitoring equipment constituted an improvement to the RPP, and CNSC staff is of the view that OPG's RPP at the WWMF is satisfactory.
75. Addressing the use of wireless technology to augment the WWMF radiation protection program, the OPG representative stated that redundancy and fail-safe behaviour will be part of the design considerations. CNSC staff reported that the proposed dosimeter with wireless capability would not be used for the assessment of the regulatory dose as it would be used only for work planning and dose control during job activity, and would

²³ Canadian Nuclear Safety Commission Regulatory Guide – G-129, *Keeping Radiation Exposures and Doses “As Low as Reasonably Achievable (ALARA)*, October, 2004.

be reviewed by CNSC staff before being implemented.

3.8.4 Radiological Hazard Control

76. CNSC staff informed the Commission that OPG's RPP implemented at the WWMF ensures that there are adequate measures in place to monitor and control radiological hazards. CNSC staff stated that OPG conducted radiological dose rate and contamination monitoring measurements at the WWMF during the licence period, and no adverse trends or deficiencies were seen. CNSC staff is of the opinion that OPG adequately controls radiological hazards at the WWMF.

3.8.5 Estimated Dose to the Public

77. OPG informed the Commission that the WWMF maintains a perimeter dose monitoring program to monitor the dose to the public from that facility, and stated that the maximum potential dose to a member of the public at the site boundary in one year is well below the regulatory annual dose limit. OPG added that, since 2007, all measured dose rates have been better than the target dose rates, and that any/all contributions from the WWMF to the offsite public dose are included as part of the Bruce Power Environmental Monitoring Program. CNSC staff informed the Commission that, as the WWMF is located within the site boundary of the Bruce Nuclear Generating Station (BNGS), the perimeter dose information from the WWMF is included in the overall BNGS public dose estimate. CNSC staff confirmed that the public dose associated with the WWMF accounts for a small fraction of the overall site dose to the public, and also confirmed that the estimated dose to the public from the WWMF is well below the regulatory annual public dose limit.
78. The Commission noted that the Bruce Grey Health Unit is the public health authority for the region containing the WWMF, and that it has not expressed any concerns regarding the WWMF activities. CNSC staff reported that this health unit does regular surveillance and reporting with regards to the health of the community, and its representatives have come before the Commission in past proceedings. CNSC staff added that this health unit has never requested that a specific kind of longitudinal study be performed in the community.

3.8.6 Conclusion on Radiation Protection

79. The Commission is of the opinion that, given the mitigation measures and safety programs that are in place or will be in place to control radiation hazards, OPG provides adequate protection to the health and safety of persons and the environment.

3.9 Conventional Health and Safety

80. Conventional health and safety covers the implementation of a program to manage workplace safety hazards. This program is mandatory for all employers and employees

in order to reduce the risks associated with conventional (non-radiological) hazards in the workplace. This program includes compliance with Part II of the *Canada Labour Code*²⁴ and conventional safety training. CNSC staff evaluated OPG's performance in this SCA focusing on the following specific areas:

- Performance
- Practices
- Awareness

After evaluating the WWMF's performance in this SCA, CNSC staff rated it as satisfactory for the period 2007-2010, and fully satisfactory for the period 2011-2016. CNSC staff noted that routine inspections had not identified major findings in this area, and that OPG continues to demonstrate its ability to keep workers safe from occupational injuries while conducting its licensed activities.

3.9.1 Performance

81. A key performance measure for this area is the number of lost-time injuries that occur each year. OPG stated that several indicators are monitored at the WWMF, including the all injury rate and the accident severity rate, and stated that both of these rates were below the target rate from 2010-2016. OPG added that the target rates have also decreased during the current licence period. CNSC staff stated that the frequency of lost-time injuries at the WWMF as reported by OPG remains low. CNSC staff has reviewed OPG's corrective actions and concluded that they were appropriate. CNSC staff added that no areas of concern for this SCA were identified.

3.9.2 Practices

82. OPG informed the Commission that worker safety is the number one priority at the WWMF, and that the conventional safety program manages the conventional workplace risks at that facility. OPG described the employee health and safety policy, which lays out the requirements, expectations, goals and targets for conventional worker health and safety at the WWMF. OPG added that it maintains an internal responsibility system throughout the organization where every employee has the shared responsibility to work co-operatively to prevent workplace injuries and illnesses. CNSC staff informed the Commission that OPG has appropriate procedures in place and adheres to conventional safety standards, such as standard NFPA 12,²⁵ to ensure that hazardous materials do not pose an unreasonable risk to persons or the environment. CNSC staff added that safe work practices were observed at the WWMF during inspections and other compliance verification activities. CNSC staff is of the view that OPG continues to view conventional health and safety as an important consideration, provides safe work practices, and has achieved a high level of personnel safety at the WWMF.

²⁴ R.S.C., 1985, c. L-2

²⁵ National Fire Protection Association – NFPA 12: *Standard on Carbon Dioxide Extinguishing Systems*, 2015

83. The Commission takes note that several intervenors representing unions and other organizations within the nuclear field expressed the view that the operations of the WWMF are performed in accordance with safe worker practices and policies. These intervenors also reported that OPG has a highly developed safety culture at the WWMF and strong safety programs with respect to conventional health and radiological safety.
84. The Commission notes that, in addition to the NSCA and its Regulations, OPG's activities and operations must comply with the *Canada Labour Code*, Part II: *Occupational Health and Safety*. The Commission recognizes that, in accordance with the licence requirements, OPG must report to the Province of Ontario on any reports made to other regulatory bodies, under the *Occupational Health and Safety Act of Ontario*²⁶ and the *Labour Relations Act*.²⁷

3.9.3 Awareness

85. OPG informed the Commission that its employee health and safety policy is a commitment to the prevention of workplace injuries and illnesses and is used to continuously improve the safety performance of the WWMF. OPG stated that, under the internal responsibility system, each employee is expected to be proactive in identifying and solving health and safety issues. CNSC staff informed the Commission that OPG has established conventional health and safety policies and programs at the WWMF to ensure that workers are protected from any physical, chemical and radiation hazards that may arise due to the work performed at that facility, and that OPG develops and delivers safety-related training courses to the employees and contractors.

3.9.4 Conclusion on Conventional Health and Safety

86. Based on the information presented, the Commission is of the opinion that the health and safety of workers and the public was adequately protected during the operation of the facility for the current licence period, and that the health and safety of persons will also be adequately protected during the continued operation of the facility.

3.10 Environmental Protection

87. Environmental protection covers OPG's programs that identify, control and monitor all releases of radioactive and hazardous substances and minimize the effects on the environment which may result from the licensed activities. It includes effluent and emissions control, environmental monitoring and estimated doses to the public. The Commission considered submissions from OPG and CNSC staff that encompass the following specific safety areas:

- Effluent and emissions control
- Environmental management system (EMS)

²⁶ *Occupational Health and Safety Act*, R.S.O. 1990, c. O.1

²⁷ *Labour Relations Act*, 1995, S.O. 1995, c. 1, Sched. A

- Assessment and monitoring
- Protection of the public
- Environmental risk assessment (ERA)

CNSC staff verified OPG's performance with respect to environmental protection through the review of OPG's reports, submissions and routine compliance inspections. The findings of the conducted inspections were minor in nature and have been adequately addressed by OPG. CNSC staff rated the WWMF's performance in this SCA as satisfactory for the period 2007-2016.

88. The Commission recognizes that CNSC staff has verified that OPGs environmental protection program at the WWMF is compliant to the requirements of REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*.²⁸

3.10.1 Effluent and Emissions Control

89. The Commission considered the information submitted by OPG regarding the airborne and liquid releases resulting from the licenced activities at the WWMF, the impact of those releases on the environment, and OPG's monitoring and control of those releases. The Commission recognizes that data submitted by OPG for tritium, iodine, carbon-14, gross alpha, gross beta-gamma and particulate releases were well below the licence limits throughout the licence period, for airborne and liquid releases.
90. CNSC staff confirmed that OPG monitors and controls airborne and liquid environmental releases, and that both airborne and liquid releases were well below the licence limits. CNSC staff informed the Commission that the release limits for the WWMF are based on the Derived Release Limits (DRL) established for that facility, and that the DRLs are calculated using CSA standard N288.1-08, *Guideline for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities*²⁹, and that OPG will be fully compliant with the 2014 edition of that standard by December 31, 2017. CNSC staff stated that atmospheric emissions from the stacks are effectively controlled, and that the air-cleaning systems at the WWMF are maintained and tested with respect to the CSA standard N288.3.4-13, *Performance testing of nuclear air cleaning systems at nuclear facilities*³⁰. The Commission notes that OPG has committed to complete the transition to be fully compliant with CSA N288.3.4-13 by December 31, 2017. CNSC staff added that stormwater and subsystem drainage is monitored at the WWMF, that those results are reported to CNSC staff and to the Ontario Ministry of the Environment and Climate Change (MOECC). CNSC staff is of the view that those results show that there are no adverse effects to the health and safety of persons or the

²⁸ Canadian Nuclear Safety Commission Regulatory Document – REGDOC-2.9.1, *Environmental Protection: Environmental Principles, Assessments and Protection Measures*, December, 2016.

²⁹ CSA Group – CSA N288.1-08, *Guideline for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities*, 2008.

³⁰ CSA Group – CSA N288.3.4-13, *Performance testing of nuclear air cleaning systems at nuclear facilities*, 2013

environment from the operation of the facility.

91. Addressing intervenor E. Bourgeois' concern regarding the public disclosure of the inventory of each radionuclide at the WWMF site, the OPG representative stated that it received many requests for this information, and that OPG is taking steps to reply to all of them to provide the information for waste volumes and activities. The OPG representative stated that all of the radionuclide inventories are tracked based on the characterization performed at the nuclear facility before being shipped to the WWMF. The intervenor stated that he would have appreciated the inventory data but was unable to obtain it and instead relied on the inventory data from CNSC staff in CMD 17-H3. The intervenor voiced the opinion that the inventory data should be public, and that it is very important to know the exact inventory and activity at the WWMF. CNSC staff reported that the radionuclide inventories are verified using spot-checks, confirmatory readings and inspections. CNSC staff noted that it is not feasible to track the waste by each isotope, and that the international practice is to track total volumes and total activity, which is in line with the *Joint Convention for the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management*³¹ (Joint Convention) reporting, which is monitored by Natural Resources Canada. The latest report was made public in December 2016. OPG reported that radionuclide-specific information was included in the Reference Waste Inventory Report for the Deep Geological Repository (DGR), which is publically available on the website of the Canadian Environmental Assessment Agency. CNSC staff reported that the radionuclide inventories are not part of the annual Regulatory Oversight Reports, but will include that information if the Commission requires it.
92. A spokesperson for intervenor E. Bourgeois clarified the expressed concern regarding the elements that would be stored inside of the proposed Large Objects Processing Building (LOPB). The OPG representative stated that, under the base reference case, that building will be used to segment the steam generator and other large metal components for easier future storage, such as in the proposed DGR. The OPG representative added that, under the base reference plan, the LOPB will not be used for the decontamination and free release of components.
93. Regarding the groundwater tritium contamination in water sample hole 231, the OPG representative noted it has been a long-standing and well discussed issue, and is due to condensation running down into the electrical ductwork from the waste stored in the building. CNSC staff stated that they are satisfied with the mitigation measures taken by OPG and that CNSC staff is continuously monitoring that area of the site. CNSC staff confirmed that no adverse effects to health or the environment are predicted. The Commission noted that there was a spike in the activity levels, which peaked in the period 2009-2010, and was due to the installation of a stormceptor, which cut into the middle of the aquifer. OPG stated that it has performed extensive studies on this issue. CNSC staff reported that the tritium levels are still below the derived release limits and

³¹ International Atomic Energy Agency – INFCIRC/546, *Joint Convention for the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management*, 1997. <<https://www.iaea.org/topics/nuclear-safety-conventions>>

that safety is maintained. The OPG representative stated that no significant impact from the tritium in the water has been seen in the lake.

94. Several intervenors raised concerns regarding the incinerator at the site, such as the reliability, waste reduction, higher emissions and the overall appropriateness of the incinerator at the WWMF. The OPG representative submitted in reply that the emissions from the incinerator are monitored and regulated by the CNSC and the MOECC, the incinerator meets the emission requirements, and that the use of the incinerator allows for a very high volume reduction, more so than any form of compaction. The OPG representative added that improvements are being made to increase the availability of the incinerator to attain the target availability of 75%. The Commission notes that incinerators are used in this manner in several other countries and that OPG participates in IAEA technical meetings to ensure it maintains international best practices. Addressing the efficiency of the incinerator, the OPG representative stated that it is utilized to a level far below the allowable limit, which leads to the assumption that it has a very low efficiency, and that the actual volume-reduction value depends on the type of waste being incinerated.
95. E. Bourgeois questioned if OPG determined what form of waste was in each bag that is sent for incineration. The OPG representative confirmed to the Commission that the incinerator is the safest method for volume reduction, and there are limits on what waste may be incinerated. For example, no highly-tritiated waste is allowed. The OPG representative stated that there are several controls in place, described the waste-sorting process and radiation monitoring, and stated that the employee dosimetry process proves that workers at the WWMF are not exposed to high levels of radiation. CNSC staff explained OPG's waste sorting and waste monitoring processes, beginning from the nuclear power plant and ending at the WWMF for incineration. CNSC staff added that inspections and spot-verifications are employed to ensure that the correct process is being followed.
96. The same intervenor voiced concern that a COG study found alpha particles at the Bruce Power site related to its incinerator, and cited possible alpha contamination at that facility. Addressing the use of radiation monitors near the incinerator, the OPG representative stated that alpha monitors are in place on the processing floor at the incinerator. The OPG representative informed the Commission that there have been no alpha events at that site. Addressing the measurement of Carbon-14, the OPG representative stated that OPG maintains a radiation protection and safety program in accordance with CNSC regulations, national standards and international practices, and that C-14 is monitored as part of the bioassay sample program.
97. The spokesperson for E. Bourgeois raised concern regarding the role of particulates in the environment. CNSC staff explained that the predictive effects assessment (PEA) considers the effect of particulates on air quality. CNSC staff reported that exceedances for particulates were seen at the site boundary, and that OPG-proposed mitigation methods should mitigate those issues. CNSC staff stated that the concentrations of particulate in the air are below the ambient air quality criteria, and CNSC staff found

them to be acceptable. Regarding the source of the particulates, CNSC staff reported that some of that matter comes from the incinerator, but it is also generated through the construction and operation of the facility. The OPG representative submitted that there will be no off-site impacts from the particulates.

98. In the hearing, the Commission noted that there have been extensive concerns expressed by intervenors related to the DRLs, and also noted that OPG is re-visiting the DRL calculations based on the new CSA standard. CNSC staff provided additional information regarding the DRLs and reported that there are three different levels of limits imposed on the licensee (such as licence limits, DRLs and action levels), and that the DRLs are used to ensure the facility is compliant with the *Radiation Protection Regulations*. In terms of calculating the actual dose to the public from the WWMF, CNSC staff stated that the same modelling and calculation procedures are used as for calculating the DRLs, and that the total dose to the public from the WWMF is on the order of 1/1000th of the limit in the *Radiation Protection Regulations*. The Commission noted that, for certain radionuclides, the DRL is larger than the total radionuclide inventory, as pointed out by F. Greening in his intervention. CNSC staff reported that, even in a catastrophic event, there would be no exceedance of the public dose limit. CNSC staff stated that the DRL is not used as a control method for the site. The OPG representative stated that there are internal investigation limits that are set slightly above the normal emission rate. The OPG representative added that there is adherence to the ALARA principle, and that action levels are in place to protect workers and the public. CNSC staff added that action levels and DRLs are not the only compliance tools, and that action levels are performance-based and based on the releases expected during normal operation. F. Greening proposed that the DRLs should be calculated according to the CSA standard N288.2, *Guidelines for calculating the radiological consequences to the public of a release of airborne radioactive material for nuclear reactor accidents*³², instead of CSA N288.1. CNSC staff stated that CSA N288.2 is applicable only to accident scenarios.
99. In his intervention, F. Greening raised concern about the fugitive emissions of tritium and C-14, based on data and calculations from a Nuclear Waste Management Organization (NWMO) report³³. Addressing that issue, the OPG representative informed the Commission that the effluent monitoring program is compliant with CSA N288.5-11³⁴, and stated that fugitive emissions have been identified and that OPG is working on improving its environmental management program. CNSC staff reported that fugitive emissions are a known phenomenon and are more difficult to monitor than other forms of emissions, but that OPG did consider fugitive emissions in their PEA, which was reviewed and accepted by CNSC staff. CNSC staff added that defense-in-depth principles ensure that the public is protected and that monitoring done by CNSC

³² CSA Group – CSA N288.2, *Guidelines for calculating the radiological consequences to the public of a release of airborne radioactive material for nuclear reactor accidents*, 2014.

³³ Garisto, N.C. et al, - NWMO Report DGR-TR-2009-09, *Deep Geologic Repository Pre-Closure Safety Assessment (VI)*, August, 2009.

³⁴ CSA Group – CSA N288.5-11, *Effluent monitoring programs at Class I facilities and uranium mines and mills*, 2011.

staff and the Ontario Ministry of Labour confirms that all the WWMF emissions contribute a very small dose to the public. The OPG representative stated that the ERA found no offsite impact from the WWMF emissions, and explained the calculation procedure for the maximum probable emission rate, which considers other sources of emissions and is used to determine if additional monitoring or controls are required. The OPG representative informed the Commission that, after the maximum probable emission rate was considered, the dose to the public from the WWMF was still small and represents a small portion of the total public dose from the Bruce Power site. The Commission noted that the fugitive emissions could be significantly higher than the reported emissions, and expressed the view that the issue of fugitive emissions should be reported in future documentation and assessments. The OPG representative confirmed that OPG will address this matter during the re-evaluation of its risk assessments.

3.10.2 Environmental Management System

100. OPG informed the Commission that the environmental management system (EMS) at the WWMF provides the structure and processes to implement their environmental policy, including the review of environmental performance targets, reportable spills, environmental compliance, and radioactive waste generation, as well as the identification of areas of the environment which the WWMF has the potential to affect. OPG stated that the EMS at the WWMF is consistent with the International Organization for Standardization (ISO) standard 14001, *Environmental Management System Standard*³⁵. CNSC staff confirmed through their compliance verification activities that annual management reviews of the EMS are occurring, and that corrective actions are documented, by reviewing OPG's meeting minutes. CNSC staff confirmed that the EMS at the WWMF is compliant with the requirements of REGDOC-2.9.1 and conforms to the ISO-14001 standard.

3.10.3 Assessment and Monitoring

101. OPG informed the Commission that it employs an extensive groundwater monitoring program, and notes that the level of tritium in the groundwater wells has been trending downwards since 2010 after the addition of various tritium mitigation methods. CNSC staff summarized its review of OPG's groundwater monitoring, perimeter dose monitoring and source monitoring, as well as CNSC staff's Independent Environmental Monitoring Program (IEMP). CNSC staff stated that, from the results of these aforementioned monitoring programs, OPG has adequate measures in place to protect the public and the environment from the releases from the WWMF. The Commission notes that the IEMP data for 2016 is scheduled to be made public by the summer of 2017.
102. Commission notes that OPG has committed to submitting its implementation plans for the WWMF to meet CSA standard N288.4-10 (R2015), *Environmental monitoring*

³⁵ International Organization for Standardization – ISO 14001, *Environmental Management System Standard*, 2015

*programs at Class I nuclear facilities and uranium mines and mills*³⁶ and for CSA standard N288.7-15, *Groundwater protection programs at Class I nuclear facilities*³⁷, by December 31, 2017.

103. Addressing the suitability of active and passive samplers for radiation monitoring at the greater Bruce Power site, and by extension the radiation monitoring data used by OPG in the ERA for the WWMF, the OPG representative provided an overview of the studies performed with respect to the active and passive samplers at the Pickering site, and stated that, due to the larger variability with the passive samplers, they were removed by OPG. Regarding the comments by E. Bourgeois's in his intervention on the active and passive BF14 and BF7 receptors measurements, the OPG representative reported that E. Bourgeois, in his intervention, is correct with certain assumptions. However, a number of factors need to be taken into account, and a monitor is not always needed to capture the necessary dose information. CNSC staff informed the Commission that the Ontario Ministry of Labour also has surveillance programs to monitor radionuclide emissions from nuclear power plants in Ontario, and those reports are made public. Several intervenors enquired as to why the active sampler is considered to be the more accurate measurement, when the passive sampler physically collects tritium, and questioned the accuracy and effectiveness of the active monitors in general. CNSC staff reported that it studied both samplers, and came to the determination that active samplers were more accurate. CNSC staff noted that, regardless of the sampler used, the dose consequences are very low.
104. The Commission noted that there were elevated levels of copper and zinc in one area of the WWMF site, and was informed that those exceedances are not related to the WWMF operation. Addressing the cause of the elevated zinc and copper levels, the OPG representative reported that it was the result of historical work from when there used to be other facilities, such as solvent treatment facilities and oil unloading facilities in the area of the contamination. Those historical activities are not related to the WWMF. The OPG representative added that the ERA showed no adverse impact to the species living in that area of the site. CNSC staff reported that it considered this contamination when reviewing OPG's ERA, and accepted OPG's explanation regarding the elevated copper and zinc levels.

3.10.4 Protection of the Public

105. OPG informed the Commission that the WWMF has MOECC environmental compliance approvals for air and liquid emissions of non-radiological substances. OPG stated that the releases of hydrocarbons, dioxins and furans are well below the allowable limits, and that the releases are reported to the MOECC. CNSC staff informed the Commission that OPG is required to demonstrate that the health and safety of the public is protected from exposures to hazardous (non-radiological) substances released from the facility, and that, based on their review of OPG's programs, CNSC staff

³⁶ CSA Group – CSA N288.4-10 (R2015), *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*, 2010 (Re-affirmed 2015).

³⁷ CSA Group – CSA N288.7-15, *Groundwater protection programs at Class I nuclear facilities*, 2015

is of the opinion that OPG's programs are protective of the public.

106. CNSC staff reported that several studies on the health of workers at the Bruce Power site and the health of members of the public showed no risk of increased cancers, and that there is a large amount of available data. The Commission noted that there was a proposal put forth during the Bruce Power licence renewal hearing that a public health survey be performed. CNSC staff responded that several studies, such as the RADICON study, have been performed, and no increased risks to the community have been found. An intervenor stated that there are multiple factors that may affect cancer rates, and that radiation may affect the rates of other diseases as well, as such the background should not be ignored and precautions should be taken. The Commission recognized that the background radiation varies substantially throughout the world, but there have been no studies that show an increase in cancer in regions with a high background radiation.
107. The Commission notes that the intervention from the Bruce Grey Health Unit expressed the view that the renewal of the WWMF would allow for the continued safe isolation and containment of ILW, LLW and spent fuel, without significant adverse effects to human health or the environment.

3.10.5 Environmental Risk Assessment

108. The Commission considered the ERA performed by OPG for the WWMF, and noted that it was performed in accordance with CSA standard N288.6-12, *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*³⁸. OPG informed the Commission that, due to the low level of both radiological and non-radiological emissions and low noise levels, under that standard no human health effects are likely. OPG stated that the ERA showed that the continued WWMF operations do not pose a significant risk to the surrounding environment. CNSC staff informed the Commission that they reviewed the PEA submitted by OPG, and stated that the conclusions of the PEA and the guidance in standards CSA N288.4-10 and CSA N288.5-11, *Effluent monitoring programs at Class I facilities and uranium mines and mills*³⁹, will be used to update the environmental and effluent monitoring plans at the WWMF. CNSC staff stated that they are satisfied with the work performed by OPG and is of the view that the continued operation of the WWMF does not pose an unreasonable risk to human health or the environment.
109. The Commission noted that several intervenors raised concerns over the rationale for the decision by OPG to not include certain fish species as Valued Ecosystem Components (VECs) in the ERA. CNSC staff provided an overview of its review process for OPG's ERA of the WWMF, including taking into account previous EAs

³⁸ CSA Group – CSA N288.6-12, *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*, 2012.

³⁹ CSA Group – CSA N288.5-11, *Effluent monitoring programs at Class I facilities and uranium mines and mills*, 2011.

and ERAs in that region and the consideration of appropriate VECs from the previous assessments. CNSC staff added that the ERAs are reviewed at a minimum every five years or if new scientific evidence comes to light, and that the intervenors' views regarding VECs will be considered when making revisions to future ERAs. CNSC staff reported that the documents provided to them by the intervenors regarding these VECs had not been available to CNSC staff at the time of the review of OPG's ERA, and informed the Commission that CNSC staff is committed to considering this information in future ERAs and reviews.

110. Asked if the intervenors and identified Aboriginal groups were directly engaged with regards to the VECs that were included in the ERAs, the OPG representative responded that the requirement to consult for ERAs is narrower than for EAs, and that there are different parameters that must be considered with respect to EAs and ERAs. The OPG representative stated that OPG met with several Aboriginal groups and maintains ongoing engagement and discussion with these groups regarding the VECs that will be included in the ERAs. On whether the scope of an EA performed under the NSCA is narrower than that of an EA performed under CEAA 2012, CNSC staff stated that the scope is not narrower and that both provide a robust analysis that considers the same factors.
111. Addressing the public review and consultation process for ERAs, CNSC staff reported that, for an EA under the NSCA, an EA Report is produced, which considers information from the ERA, as well as other sources such as regulatory oversight reviews, technical documents, and the IEMP. CNSC staff stated that the EA report, including the conclusions from the ERA, is made publically available in CNSC staff's CMD 60 days before the public hearing. CNSC staff added that meetings with the public prior to finalizing the EA report are undertaken on a case-by-case basis. Information obtained from intervenors is considered for the next iteration of an ERA and is also used in the environmental monitoring and compliance programs.
112. The Commission noted that the consideration of potential updates to the VECs would have been beneficial had it occurred before the licence renewal hearing. CNSC staff reported that, as the ERAs are updated every five years, the WWMF will always have a living, valid ERA, and that CNSC staff's recommendations from the most recent version are the ones presented to the Commission. Regarding the joint consideration of VECs by OPG and Bruce Power, the Bruce Power representative stated that it is in continuous discussion with Indigenous groups, and that Bruce Power and OPG are working on a joint study with the Métis Nation of Ontario (MNO) regarding additional VECs. The Bruce Power representative added that Bruce Power's most recent ERA will be brought before the Commission later this year.
113. The Commission recognized that several of the intervenors expressed concern over the content of the ERAs, and asked CNSC staff if they discuss each matter with the Indigenous communities until a consensus is reached and then report on those results in the Regulatory Oversight Reports. CNSC staff responded that the performance of the WWMF is included in the annual Regulatory Oversight Report that is presented to the

Commission for which participant funding is also provided, and that periodic reports regarding the Environmental Protection SCAs are updated throughout the year. Regarding future plans for environmental monitoring and ERAs, the Commission noted that CNSC staff committed to further engagements with these intervenors regarding potential modifications to the ERAs and environmental monitoring programs.

114. The Commission recognizes that noise was identified as a physical stressor in the ERA, and asked CNSC staff if the level of noise related to the WWMF operations could cause adverse effects to human health or the environment. CNSC staff confirmed that OPG considered noise as a stressor in the ERA and PEA, and that CNSC staff reviewed the level of noise generated from the WWMF operations, new construction activities, and OPG's mitigation measures, and CNSC staff is satisfied that there will be no adverse effects from the level of noise from that site. Regarding the noise modelling performed by OPG during its ERA, CNSC staff stated that OPG's specific models were not reviewed; however, CNSC staff noted that OPG employed recognized industry models, and CNSC staff is satisfied with the results of those models.
115. An intervenor raised concern regarding the accuracy of noise monitoring results, as well as the level of noise OPG considered in its ERA. The OPG representative responded that the WWMF is compliant with the MOECC *Environment Noise Guidelines for Stationary and Transportation Sources*⁴⁰, which limit the noise to 45 dB during the hours of 7:00 AM to 7:00 PM, and 40 dB from 7:00 PM to 7:00 AM, for the rural area in which the WWMF is situated. The OPG representative stated that, as a mitigating factor to reduce the level of noise, construction activities do not occur during the nighttime hours.
116. The Commission noted the concerns of the MNO regarding OPGs ERA and PEA, and the MNO representative stated that those assessments did not adequately account for the effects on the current use of lands and resources. Elaborating on that point, the MNO representative stated that MNO disagreed with certain VECs that were selected or not selected by OPG for consideration during those assessments, and is continuing to work with OPG on the issue of VECs for future assessments.

3.10.6 Conclusion on Environmental Protection

117. Based on the assessment of the application and the information provided at the hearing, the Commission is satisfied that, given the mitigation measures and safety programs that are in place to control hazards, OPG will provide adequate protection to the health and safety of persons and the environment. The Commission notes that OPG and CNSC staff will pursue further engagements with Indigenous groups with respect to the potential inclusion of additional VECs in the next cycle of ERAs for the WWMF.

⁴⁰ Ontario Ministry of the Environment and Climate Change – NPC-300, *Environment Noise Guidelines for Stationary and Transportation Sources – Approval and Planning*, August, 2013.
< <https://www.ontario.ca/page/environmental-noise-guideline-stationary-and-transportation-sources-approval-and-planning> >

3.11 Emergency Management and Fire Protection

118. Emergency Management and Fire Protection cover OPG's measures for preparedness and response capabilities which exist for emergencies and for non-routine conditions at the WWMF. The Commission considered submissions from OPG and CNSC staff that encompass the following specific safety areas:

- Nuclear emergency preparedness and response
- Fire emergency preparedness and response

CNSC staff rated the WWMF's performance in this SCA as satisfactory for the period 2007-2016.

3.11.1 Nuclear Emergency Preparedness and Response

119. The Commission considered OPG's preparedness and response to potential emergencies at the WWMF. OPG informed the Commission about annual hazardous material spill drills conducted at the site, as well as annual fire and medical drills performed in cooperation with Bruce Power. OPG stated that Bruce Power provides adequately trained personnel and equipment suitable to various emergencies, and further stated in CMD 17-H3.1 that Bruce Power provides OPG with a letter confirming the inspections and maintenance of their emergency equipment each year. OPG added that the safety case of the facility was re-examined following the Fukushima event in Japan, and that, while no significant gaps in the safety case were identified, enhancements were made to post-event worker response procedures and OPG purchased additional emergency equipment. CNSC staff noted that OPG made improvements to the WWMF emergency management program and processes pursuant to a direction that was sent to licensees under the authority of subsection 12(2) of the GNSCR⁴¹ after the Fukushima event, as well as pursuant to REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*⁴². CNSC staff verified that OPG is currently in compliance with CNSC regulatory document RD-353, *Testing and Implementation of Emergency Measures*⁴³, and further stated that a focused compliance inspection was performed on OPG's emergency management program, and along with additional compliance verification activities, CNSC staff is of the view that OPG's emergency preparedness program is satisfactory. The Commission notes that OPG has committed to the full compliance of REGDOC-2.10.1 (Version 2), *Nuclear Emergency Preparedness and Response*⁴⁴, by December 31, 2018.

⁴¹ *General Nuclear Safety and Control Regulations* (SOR/2000-202)

⁴² CNSC Regulatory Document – REGDOC – 2.10.1, *Nuclear Emergency Preparedness and Response*, October, 2014.

⁴³ CNSC Regulatory Document – RD-353, *Testing and Implementation of Emergency Measures*, October, 2008.

⁴⁴ CNSC Regulatory Document – REGDOC – 2.10.1 (Version 2), *Nuclear Emergency Preparedness and Response*, February, 2016.

3.11.2 Fire Preparedness and Emergency Response

120. OPG informed the Commission that the fire detection and protection systems are in compliance with the NFCC and NBCC, and that all inspections, testing and maintenance of fire detection and protection systems were performed in accordance with the NFCC. OPG provided details on several improvements made to its fire protection program during the course of the licence period, and stated that internal audits and assessments conducted in 2013 and 2016, respectively, did not indicate any deficiencies with the WWMF fire protection program. OPG added that the fire protection systems will respond to emergency situations as per the design basis, and that adequate responses to two minor events in 2013 and 2015 ensured that there were no negative impacts on the health and safety of OPG workers, the public, or the environment. CNSC staff informed the Commission that, through compliance verification activities such as inspections and desktop reviews, the fire protection program at the WWMF had been found to meet regulatory requirements and the requirements of the operating licence. CNSC staff stated that reports from third party reviews for the WWMF fire protection program were reviewed and audited, and CNSC staff is of the view that they meet regulatory requirements.

3.11.3 Conclusion on Emergency Management and Fire Protection

121. Based on the above information, the Commission concludes that the fire protection measures and emergency management preparedness programs in place, and that will be in place, at the WWMF are adequate to protect the health and safety of persons and the environment. The Commission also recognizes the adequacy of emergency services and equipment provided by Bruce Power at the WWMF site.

3.12 Waste Management

122. Waste management covers the licensee's site-wide waste management program. CNSC staff evaluated OPG's performance with regards to the following specific safety areas:
- Waste Minimization
 - Waste Management Practices
 - Decommissioning Plans

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2016. These specific areas will be discussed concurrently in this section.

123. OPG informed the Commission of its waste management program at the WWMF, including the applicable regulatory documents and standards that are followed at that site, and informed the Commission regarding the generation and storage of LLW and ILW, as well as how it pertains to OPG's EMS. OPG presented information on new initiatives to minimize and manage waste, such as the "Likely Clean" waste

segregation program, targets for non-processible waste, and pilot projects on waste sorting and external waste reprocessing. OPG also provided details regarding the decommissioning program and the preliminary decommissioning plan (PDP), stating that it was developed and is being managed in accordance with regulatory requirements. OPG stated that, under the PDP, all of the waste will be removed prior to decommissioning, therefore there will be little residual radiation, and there will be no need to defer decommissioning of the facility.

124. CNSC staff confirmed that the waste management program at the WWMF is in compliance with standards CSA N292.2-07, *Interim dry storage of irradiated fuel*⁴⁵ and CSA N292.3-08, *Management of low-and intermediate-level radioactive waste*⁴⁶. CNSC staff informed the Commission that OPG's PDP meets the requirements of CSA standard N294-09, *Decommissioning of facilities containing nuclear substances*⁴⁷ and regulatory guide G-219, *Decommissioning Planning for Licenced Activities*⁴⁸. CNSC staff noted that, if additional structures were to be constructed at the WWMF site, the PDP would be revised. CNSC staff is of the view that OPG has an acceptable waste management program at the WWMF, and that OPG will continue to adequately provide for the protection of the workers, the public, and the environment.
125. The Commission notes that OPG has committed to ensuring that the WWMF will be fully compliant with the requirements of CSA N292.0-14, *General Principles for the Management of Radioactive Waste and Irradiated Fuel*⁴⁹; CSA N292.2-13, *Interim Dry Storage of Irradiated Fuel*⁵⁰; and CSA N292.3-14, *Management of Low-and Intermediate-Level Radioactive Waste*⁵¹, by October 31, 2017. The Commission recognizes that CNSC staff accepted the timeline for the implementation of these standards, and that CNSC staff will monitor the implementation progress and conduct compliance verification activities.
126. The CNA representative commented that spent fuel and other waste from nuclear operations does provide a challenge for the nuclear industry, and stated that spent fuel does provide an opportunity for future development and innovation.
127. The Commission acknowledges that the submission for the periodic update of the PDP for the WWMF was received on January 30, 2017, and is currently under evaluation by CNSC staff.

3.13 Security

⁴⁵ CSA Group – CSA N292.2-07, *Interim dry storage of irradiated fuel*, 2007

⁴⁶ CSA Group – CSA N292.3-08, *Management of Low-and Intermediate-Level Radioactive Waste*, 2008

⁴⁷ CSA Group – CSA N294-09, *Decommissioning of facilities containing nuclear substances*, 2009.

⁴⁸ Canadian Nuclear Safety Commission Regulatory Document – G-219, *Decommission Planning for Licenced Activities*, June, 2000.

⁴⁹ CSA Group – CSA N292.0-14, *General Principles for the Management of Radioactive Waste and Irradiated Fuel*, 2014

⁵⁰ CSA Group – CSA N292.2-13, *Interim Dry Storage of Irradiated Fuel*, 2013

⁵¹ CSA Group – CSA N292.3-14, *Management of Low-and Intermediate-Level Radioactive Waste*, 2014

128. Security covers the programs required to implement and support the security requirements stipulated in the relevant regulations and the licence. This includes compliance with the applicable provisions of the GNSCR and the *Nuclear Security Regulations*.⁵² CNSC staff evaluated OPG's performance with regards to the following specific safety areas:

- Facilities and equipment
- Response arrangements
- Security practices
- Drills and exercises

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2010 and fully satisfactory for the period 2011-2016. These specific areas will be discussed concurrently in this section.

129. The Commission has considered OPG's security program at the WWMF, and in its submissions at the hearing, OPG provided information on the purpose and objectives, the key elements, and the protection measures of the WWMF security program. OPG stated that the physical security program is implemented through contracted security services provided by Bruce Power Security, who implement the WWMF security program in accordance with OPG's policies and procedures. OPG also provided details on the importance and key elements of its cyber-security program at the WWMF. The Commission notes that the security program at the WWMF is in compliance with the following regulatory documents:

- RD-321, *Criteria for Physical Protection Systems and Devices at High-Security Sites*;⁵³
- RD-363, *Nuclear Security Officer Medical, Physical and Psychological Fitness*;⁵⁴
- RD-361, *Criteria for Explosive Substance Detection, X-Ray Imaging and Metal Detection Devices at High-Security Sites*,⁵⁵ and
- REGDOC-2.12.2, *Site Access Security Clearance*⁵⁶

The Commission recognizes that OPG has committed to the full compliance of REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources*,⁵⁷ by May 31, 2018.

⁵² SOR/2000-209

⁵³ Canadian Nuclear Safety Commission Regulatory Document – RD-321, *Criteria for Physical Protection Systems and Devices at High-Security Sites*, December, 2010

⁵⁴ Canadian Nuclear Safety Commission Regulatory Document – RD-363, *Nuclear Security Officer Medical, Physical and Psychological Fitness*, November, 2008

⁵⁵ Canadian Nuclear Safety Commission Regulatory Document – RD-361, *Criteria for Explosive Substance Detection, X-Ray Imaging and Metal Detection Devices at High-Security Sites*, December, 2010

⁵⁶ Canadian Nuclear Safety Commission Regulatory Document – REGDOC-2.12.2, *Site Access Security Clearance*, April, 2013

130. CNSC staff informed the Commission regarding the onsite security inspections, as well as the desktop reviews and other assessments of OPG's documentation and analyses. CNSC staff has accepted the results of those compliance verification activities, as well as OPG's responses to compliance notices. CNSC staff also noted that, in October 2015, OPG participated in the IAEA International Physical Protection Advisory (IPPA) Service mission, and OPG submitted its practices for international review. The Commission notes that the IPPA is an international peer review of Canada's physical protection measures, which Canada invited, and in which OPG took part. CNSC staff added that an updated safety analysis report that includes the construction and commissioning of new storage buildings will be reviewed and verified. CNSC staff is of the opinion that OPG maintained robust physical protection measures and properly implemented security program upgrades at the WWMF, and that the security program at the WWMF continues to exceed the regulatory requirements for a high-security nuclear facility.
131. The Commission concludes that OPG has made adequate provision for the physical security of the facility, and is of the opinion that OPG will continue to provide for it during the proposed licence period.

3.14 Safeguards and Non-Proliferation

132. 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)*. Pursuant to the NPT, Canada has entered into a safeguards agreement with the International Atomic Energy Agency (IAEA). The objective of this agreement and its Additional Protocol 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.
133. The scope of the non-proliferation program for the WWMF is limited to the tracking and reporting of foreign obligations and origins of nuclear material. This tracking and reporting assists the CNSC in the implementation of Canada's bilateral nuclear cooperation agreements with other countries. The import and export of controlled nuclear substances, equipment and information identified in the *Nuclear Non-proliferation Import and Export Control Regulations*⁵⁸ require separate authorization from the CNSC.
134. CNSC staff evaluated OPG's performance with regards to the following specific areas:

⁵⁷ Canadian Nuclear Safety Commission Regulatory Document – REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources*, May, 2013

⁵⁸ Nuclear Non-proliferation Import and Export Control Regulations (SOR/2000-210)

- Nuclear material accountancy and control
 - Access and assistance to the International Atomic Energy Agency
 - Operational and design information
 - Safeguards, equipment, containment and surveillance
135. After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2016. These specific areas will be discussed concurrently in this section. The Commission notes that "Non-proliferation" was added to this SCA in 2012, therefore the compliance ratings for the period 2008-2011 consider the former Safeguards SCA only. The Commission wishes to make clear that this distinction does not impact its current consideration of the licence renewal application.
136. OPG informed the Commission that the WWMF met all safeguards conditions in its operating licence, all applicable IAEA safeguards requirements, and met the terms of the agreement between Canada and the IAEA pursuant to the NPT. OPG provided details regarding the compliance activities of the WWMF with respect to the IAEA's fuel verification program, and stated that annual self-assessments and worker qualification are performed to ensure the adherence to the safeguards program. OPG stated that the WWMF is in full compliance with CNSC regulatory document RD-336, *Accounting and Reporting of Nuclear Material*⁵⁹, and takes into consideration CNSC guidance document GD-336, *Guidance for Accounting and Reporting of Nuclear Material*⁶⁰. OPG added that the IAEA is informed of expansion plans at the WWMF, and that OPG will request the IAEA to identify any IAEA measures which need to be addressed to allow for the expansion of the facility.
137. CNSC staff informed the Commission that the safeguards program conforms to the measures required by the CNSC to meet Canada's international obligations, including those additional measures regarding non-proliferation. CNSC staff stated that they monitor the performance of the WWMF through participation in IAEA inspections and through regulatory oversight activities independent of the IAEA, including onsite inspections and desktop reviews of OPG compliance reporting and the relevant WWMF documentation. The Commission noted that the compliance activities include the timely reporting on the movement and location of all nuclear material, as well as the provision of access and assistance to IAEA inspectors regarding safeguards activities. CNSC staff added that CNSC staff's activities will ensure that the construction and operation of new structures will be compliant with all applicable documents and standards. CNSC staff is of the opinion that the WWMF meets regulatory requirements, that the overall performance for this SCA is satisfactory and that OPG is qualified to carry out its authorized activities.
138. Addressing the public availability of the information regarding the volume of waste at the WWMF, CNSC staff stated that there is a small subset of material that is

⁵⁹ Canadian Nuclear Safety Commission Regulatory Document – RD-336, *Accounting and Reporting of Nuclear Material*, June, 2010.

⁶⁰ Canadian Nuclear Safety Commission Guidance Document – GD-336, *Guidance for Accounting and Reporting of Nuclear Material*, June, 2010.

considered to be safeguarded nuclear material. CNSC staff added that this information is protected information and therefore is not available to the public, however it is reported to the IAEA in a protected manner.

139. Based on the above information, the Commission is satisfied that OPG has provided for, and will continue to provide for, adequate measures in the areas of safeguards and non-proliferation at the WWMF that are necessary for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

3.15 Packaging and Transport

140. Packaging and transport covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility. The licensee must adhere to the *Packaging and Transport of Nuclear Substances Regulations*⁶¹ and Transport Canada's *Transportation of Dangerous Goods Regulations*⁶² for all shipments leaving the facility. CNSC staff evaluated OPG's performance with regards to the following specific safety areas:

- Packaging and transport
- Package design and maintenance
- Registration for use

After evaluating the WWMF's performance in this SCA, CNSC rated it as satisfactory for the period 2007-2016. These specific areas will be discussed concurrently in this section.

141. The Commission considered OPG's nuclear radioactive materials transportation program at the WWMF. OPG informed the Commission of the objective of the program, the controls and procedures regarding the shipping and handling of radioactive material, and the emergency response for transportation incidents. OPG submitted that all offsite transportation of radioactive materials is in accordance with the *Packaging and Transport of Nuclear Substances Regulations*, and that an internal program is in place to maintain an equivalent level of safety for workers, members of the public and the environment, for on-site transfers of radioactive material. OPG added that all transport drivers and transportation packaging is compliant with CNSC regulations, and that OPG provides briefings and training to emergency personnel in the event of an accident involving the transportation of radioactive material on public roads.
142. CNSC staff informed the Commission about its evaluation of OPG's radioactive material transportation program at the WWMF. CNSC staff reported on the onsite inspections and desktop reviews of compliance reporting. From the results of those

⁶¹ SOR/2000-208

⁶² SOR/2001-286

compliance verification activities, CNSC staff has determined that OPG's documentation and overall performance is acceptable and meets regulatory requirements, and is of the view that OPG is qualified to carry out the authorized activities under this SCA.

143. With regards to traffic accidents that occurred while transporting nuclear substances to and from the WWMF, the OPG representative informed the Commission that there were no accidents that caused injury to a person or a radioactive release. The OPG representative stated that, in total, for the past forty-three years there have been seven minor accidents related to the WWMF activities, and that in only one of those accidents the OPG employee was at fault. The OPG representative also provided an overview of the driver training program.
144. Based on the above information, the Commission is satisfied that OPG is meeting regulatory requirements regarding packaging and transport.

3.16 Aboriginal Engagement and Public Information

145. CNSC staff informed the Commission that the CNSC made available up to \$75,000 through its Participant Funding Program (PFP) to assist members of the public, Indigenous groups, and other stakeholders in providing value-added information to the Commission through informed and topic-specific interventions. Based on recommendations from the Funding Review Committee, external to the CNSC, the CNSC awarded participant funding for a total amount of \$59,112.20 to the following recipients, who were required to submit a written intervention and make an oral intervention at the Commission's public hearing:

- Eugene Bourgeois
- Métis Nation of Ontario (MNO)
- Historic Saugeen Métis (HSM)

3.16.1 Aboriginal Engagement

146. The common law duty to consult with Aboriginal peoples applies 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 Aboriginal peoples. The CNSC ensures that all of its licensing decisions under the NSCA uphold the honour of the Crown and considers Aboriginal peoples' potential or established Aboriginal and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982*⁶³.

⁶³ *Constitution Act, 1982*, Schedule B to the *Canada Act 1982*, 1982, c. 11 (U.K.).

147. OPG informed the Commission that it is committed to engaging the Indigenous communities regarding its nuclear waste operations and future projects, and that OPG maintains an Indigenous Relations policy in accordance with REGDOC-3.2.2, *Aboriginal Engagement*⁶⁴. OPG stated that, over the past five years, OPG has worked with over eleven Aboriginal communities and held numerous meetings with the Indigenous communities who have rights and/or interests in OPG's nuclear operations, including the current and planned operation of the WWMF. OPG added that engagement with the communities during the relicensing process included communication by e-mail, telephone, in-person meetings, community information sessions and presentations, and that several site tours were conducted at the WWMF.
148. CNSC staff reported that it had identified four Aboriginal groups and affiliated organizations which may be interested in the proposed licence renewal, as the proposed activities are located within their respective treaty lands and/or asserted traditional territories. These four groups were:
- Saugeen First Nation and the Chippewas of Nawash Unceded First Nation, together referred to as Saugeen Ojibway Nation
 - Historic Saugeen Métis
 - Métis Nation of Ontario
 - Union of Ontario Indians

CNSC staff provided an overview of its own Aboriginal engagement and consultation activities related to this licence application, including letters, telephone calls, and meetings. The Commission notes that these aforementioned organizations have requested that the CNSC keep them informed of its licensing reviews when its members have been identified.

149. CNSC staff reported to the Commission that its review of OPG submission had confirmed that OPG has met the requirements of REGDOC-3.2.2. CNSC staff concluded, based from its review of the information contained in the licence renewal application, that the proposed activities are not likely to result in any adverse impacts to potential or established Aboriginal and/or treaty rights. The Commission recognizes that all identified First Nation and Métis groups are encouraged to participate in the licence review process and the public hearing process.
150. The Commission enquired as to why the Union of Ontario Indians did not file an intervention. CNSC staff noted that that group is not a rights-holder, and that it is a political organization to which many First Nation communities belong. CNSC staff stated that this group was kept informed of the hearing and of the participant funding, therefore if this organization wished to participate, they had the opportunity to do so.

⁶⁴ Canadian Nuclear Safety Commission Regulatory Document – REGDOC-3.2.2, *Aboriginal Engagement*, February, 2016.

151. Addressing any significant communication issues between the HSM and OPG, the HSM representative reported that there were no significant issues during their engagement with OPG or with CNSC staff. The HSM representative provided an overview of the correspondence between the HSM and CNSC staff, and stated that CNSC staff was timely, attentive and helpful in answering questions. The HSM representative noted that the engagement logs and plans signed by the HSM and OPG show a fair exchange of information. The Commission noted that there is a formal five-year agreement between the HSM and OPG that was signed on September 28, 2013, and enquired if OPG is interested in renewing that agreement. The OPG representative responded that OPG will work with the HSM to renew that agreement, and noted their appreciation of the engagement work that was undertaken with the HSM.
152. Asked if any information requests from the HSM were denied by OPG or the CNSC, the HSM representative provided an overview of the purpose and process for information requests, and stated that no information request had ever been denied.
153. At the request of the Commission, the MNO confirmed that they did not have any residual concerns regarding the WWMF licence renewal process, provided that all of the commitments made by OPG were acted upon. The OPG representative reiterated the commitments made by the organization, and added that OPG will work closely with the MNO to integrate their knowledge into future work, such as future ERAs. The MNO and OPG representatives stated that both organizations are working toward the same goals. CNSC staff added that it had engaged the MNO regarding the WWMF licence renewal process, and committed to future meetings with that organization.
154. Addressing the Commission's request for clarification on traditional land use, the MNO representative provided a brief overview of MNO land rights and traditional activities that occur on those lands. The MNO representative noted that the SON and HSM also have rights and activities on that land, but added he is not a consultant for those organizations.
155. The SON representative stated that it has a long history of participation in the EA of this facility, as well as other nuclear industry projects or proposed projects.
156. The SON representative provided an overview of its engagement with OPG and CNSC staff regarding the WWMF licence renewal application, OPG's commitment to the SON to understand and address legacy issues relating to OPG's operations within its traditional territory, as well as issues pertaining to the proposed DGR project. The SON representative stated that SON has raised concerns in several meetings and telephone calls with OPG representatives, and that it presented its own proposal to CNSC staff, where discussions are ongoing.
157. The Commission suggested that OPG bring together all the identified Indigenous communities in order to develop a consensus on ERAs, PEAs, and other topics of interest. The OPG representative noted that that would entail a significant challenge and that they would take that suggestion into consideration. The OPG representative

stated that OPG typically meets with each group individually to discuss their individual concerns. Representatives from the identified Indigenous groups stated that, while they are supportive of such dialogue, each group has unique rights, interests and ways of life to consider, therefore their preference is to discuss their concerns with OPG individually. The Commission enquired if Bruce Power and OPG would have a joint meeting with Indigenous groups at the WWMF site, and the Bruce Power representative stated that that is a difficult proposition, but provides an opportunity for future workshops to discuss common issues.

158. Regarding individual perceptions of risk due to the proximity of the WWMF to MNO lands, the MNO representative stated that recent surveys show some trends that individual citizens are avoiding the area around nuclear facilities due to the perceived risk of contamination, regardless of actual risk. The Commission expressed interest in reviewing this data, and the MNO representative stated they would share the data with the Commission. Asked if an educational process may help alleviate those perceptions, the MNO representative stated that is a difficult question to answer as education programs are in place, however some individuals still have negative perceptions of the nuclear facilities. The MNO representative provided examples of how those perceptions may affect their way of life.
159. Several intervenors representing Indigenous groups expressed that they were unaware that OPG was transporting nuclear materials to and from the WWMF. CNSC staff stated that it provided additional information and clarity to these intervenors and that it is part of the reason for the proposal that the Nuclear Substance and Radiation Device Licence be integrated into the Waste Management Facility Operating Licence. CNSC staff added that discussions with these intervenors prompted changes to the proposed licence conditions to clearly state the permitted activities.
160. The Indigenous groups expressed their appreciation to the Commission for its consideration of their interventions. The Commission wishes to note here that it is appreciative of the historical information provided by several of the Aboriginal groups who acted as intervenors for this hearing.

3.16.2 Public Information

161. A public information program is a regulatory requirement for licence applicants and licensed operators of Class I nuclear facilities. Paragraph 3(j) of the *Class I Nuclear Facilities Regulations*⁶⁵ requires that licence applications include “the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects on the environment and the health and safety of persons that may result from the activity to be licensed.”
162. OPG informed the Commission regarding its Public Information Program (PIP), which includes community consultation programs, disclosures, and community outreach. OPG presented a detailed description of each program and the forms of outreach it

⁶⁵ SOR/2000-204

provides, such as the posting of public disclosure reports, newsletters, websites and social media, a 24-hour call centre, meetings with elected officials, and tours of the WWMF. OPG described future plans to improve upon its PIP for the WWMF, and stated that the PIP is in compliance with regulatory document RD-99.3, *Public Information and Disclosure*⁶⁶.

163. CNSC staff reported to the Commission on its review of OPG's public engagement activities throughout the current licence period, and stated that those activities are appropriate to keep the public informed. CNSC staff is of the view that OPG has a satisfactory public information and disclosure program for the WWMF that meets CNSC regulatory requirements.
164. Based on this information, the Commission is satisfied that OPG's public information program meets regulatory requirements and is effective in keeping Indigenous communities and the public informed of facility plans and operations. The Commission encourages OPG to continue to create, maintain and improve its dialogue with the neighbouring communities.
165. The Commission is also satisfied with OPG's commitment to not proceed with construction of new buildings if the need is not demonstrated and to submit to the CNSC the justification for the construction of new buildings. The Commission recognizes that the hold point requiring Commission approval for the commissioning of the structures can provide for future potential opportunities for public engagement, and is appreciative of the concerns raised by the SON.
166. The Commission acknowledges the efforts made by CNSC staff in relation to the CNSC's obligations regarding Aboriginal engagement and consultation. The Commission is satisfied that the proposed licence renewal will not cause any adverse impacts to any potential or established Aboriginal or treaty rights and that the engagement activities undertaken for this licence renewal have been adequate.

3.17 Decommissioning Plan and Financial Guarantee

167. The Commission requires that licensees have operational plans for decommissioning and long-term management of waste produced during the life-span of the facility. In order to ensure that adequate resources are available for safe and secure future decommissioning of the WWMF site, the Commission requires that an adequate financial guarantee for the realization of the planned activities is put in place and maintained in a form acceptable to the Commission throughout the licence period.
168. The Commission notes that the PDP for the WWMF was considered in the "Waste Management" SCA in Section 3.11 of this *Record of Decision*.

⁶⁶ Canadian Nuclear Safety Commission Regulatory Document – RD/GD-99.3, *Public Information and Disclosure*, March, 2012.

169. Under subsection 24(5) of the NSCA, the Commission has exercised its authority to, by licence, require OPG to provide an acceptable FG, and paragraph 3(1)(l) of the GNSCR mandates that “an application for a licence shall contain a description of any proposed financial guarantee related to the activity for which a licence application is submitted”.
170. The Commission notes that OPG’s consolidated FG for all of its Ontario assets, including the WWMF, for the period 2013-2017 was accepted in 2012, as described in that 2012 *Record of Decision*.⁶⁷ OPG provides annual FG reports to CNSC staff, and updates the FG every five years, in accordance with G-219 and G-206, *Financial Guarantees for the Decommissioning of Licenced Activities*.⁶⁸ CNSC staff reported to the Commission that the projected total FG requirement for 2016 was \$15,553M, and that the total available funds for the guarantee stood at \$17,957M. CNSC staff noted that, as the available funds are greater than the projected decommissioning costs, it is of the view that the FG meets CNSC requirements for 2017.
171. Asked if the FG for the WWMF will be sufficient if proposed projects such as the DGR are not approved, the OPG representative stated that it is too early to know definitively the effect of future regulatory and licensing decisions on OPG’s decommissioning and waste management costs.
172. The Commission anticipates that the revised PDP and FG for the next five-year cycle will be presented to the Commission by the end of 2017.
173. Based on this information, the Commission considers that the preliminary decommissioning plans and related financial guarantee are acceptable for the purpose of the current application for licence renewal.

3.18 Cost Recovery

174. The Commission notes that there is a requirement under paragraph 24(2)(c) that the licence application be accompanied by the prescribed fee. CNSC staff reported that OPG is in good standing with respect to the *Cost Recovery Fees Regulations*⁶⁹ requirements with respect to the WWMF.

3.19 Nuclear Liability Insurance

175. The Commission notes that the WWMF is required to maintain nuclear liability insurance. CNSC staff reported that OPG has maintained nuclear liability insurance for

⁶⁷ Record of Proceedings, Including Reasons for Decision In the Matter of *Ontario Power Generation Inc. Financial Guarantee and Licence Amendments for OPG's Class I Nuclear Facility Licences in Ontario*. Public Commission Hearing Date: October 24, 2012.

⁶⁸ Canadian Nuclear Safety Commission Regulatory Document – G-206, *Financial Guarantees for the Decommissioning of Licenced Activities*, June, 2000.

⁶⁹ SOR/2003-212

the duration of the WWMF's current licence period and must continue to maintain nuclear liability insurance under the *Nuclear Liability and Compensation Act*⁷⁰ which came into force on January 1, 2017. OPG informed the Commission that insurance inspections are conducted at the WWMF at the request of the nuclear property or conventional insurers.

176. The Inverhuron Committee raised concern with regards to the risks involved with the WWMF, and stated that the insurance for the facility is inadequate. CNSC staff stated that they are unaware of any high risks at the facility, and informed the Commission that the WWMF is insured in accordance with the requirements of the *Nuclear Liability and Compensation Act*. The Commission notes that the insurance coverage requirements under the NSCA are determined and administered by the Minister of Natural Resources, not the CNSC.

3.20 Improvement Plan and Significant Future Activities

177. The Commission recognizes that CNSC staff has been monitoring the implementation of improvements to the WWMF based on the Fukushima action plan, and that CNSC staff is of the view that OPG's progress is satisfactory. The Commission notes that CNSC staff will continue to monitor OPG's implemented improvements through routine compliance activities.
178. The Commission noted the proposed improvements for the WWMF and asked how CNSC staff would follow up on OPG's commitments to these improvements. CNSC staff responded that it would review the proposed improvements, and if they become part of the licensing basis, then CNSC staff would conduct compliance verification activities to enforce regulatory compliance. The Commission noted that the proposed changes are not mandatory. However, if OPG were to choose to not follow through with the proposed improvements, the Commission would be informed through mechanisms such as the Regulatory Oversight Reports.
179. Asked about future plans for the total WWMF inventory, the OPG representative responded that they would consider reporting to the Commission the total annual waste volume and the changes in volume from year-to-year, and suggested that the Regulatory Oversight Reports would be one mechanism to accomplish this. CNSC staff stated that all waste inventories in Canada will be reported to the IAEA under the purview of Natural Resources Canada, for inclusion in the Joint Convention Report, which will be available for public review in May 2018.

3.21 Licence Length and Conditions

180. OPG requested the renewal of the current operating licence for a period of 10 years. CNSC staff recommended the renewal of the licence for a period of 10 years, stating

⁷⁰ S.C. 2015, c. 4, s. 120

that OPG is qualified to carry on the licensed activities authorized by the licence. CNSC staff also recommended that annual reports on the facility be provided for consideration by the Commission at public meetings. In making its recommendation, CNSC staff stated that OPG has strong operating experience and demonstrated compliance in carrying out the activities under the previous licence, and that the hazards and impacts of those hazards are well-characterized and predicted in the environmental impact report. CNSC staff reported that the ratings for all SCAs were stable or improved over the previous licence period. CNSC staff added that annual regulatory oversight reports presented to the Commission at public proceedings allow for frequent public updates regarding licensee performance and CNSC regulatory oversight activities, including public participation.

181. The Commission notes that several intervenors were supportive of a ten-year licence, while other intervenors recommended a shorter licence term or that a ten-year licence be conditional upon periodic public reviews.
182. Based on all the information considered for this licence renewal application, the Commission is satisfied that a 10-year licence is appropriate. The Commission accepts the licence conditions as recommended by CNSC staff.

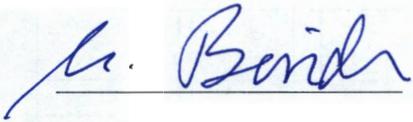
4.0 CONCLUSION

183. The Commission has considered the information and submissions of the applicant, CNSC staff and all participants as set out in the material available for reference on the record, as well as the oral and written submissions provided or made by the participants at the hearing.
184. The Commission is satisfied that, given the mitigation measures and safety programs that are in place to control hazards, OPG provides adequate protection to the environment. The Commission finds that the renewal, with the requested new construction, does not constitute a designated project under CEEA 2012. The Commission notes that the NSCA provides a strong regulatory framework for environmental protection, and is satisfied that the environment will be protected in the licence period. The Commission considers the environmental review that was conducted by CNSC staff to be acceptable and thorough.
185. The Commission is satisfied that the applicant meets the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that the applicant is qualified to carry on the activity that the proposed licence will authorize and that the applicant 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.
186. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control*

Act, renews the Waste Facility Operating Licence issued to Ontario Power Generation for its Western Waste Management Facility located in Kincardine, Ontario. The renewed licence, WFOL-W4-314.00/2027, is valid from June 1, 2017, until May 31, 2027, unless suspended, amended, revoked or replaced.

187. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 17-H3.
188. The Commission authorizes the consolidation of the licensed activities of import and export of nuclear substances from OPG's Nuclear Substances and Radiation Devices Licence No. 12861-15-19.0 into the proposed WWMF licence. The Commission concurrently amends OPG's Nuclear Substances and Radiation Devices Licence No. 12861-15-19.0 to remove the reference to the Western Waste Management Facility located in Appendix: Locations of Licensed Activities, of that licence.
189. The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.
190. The Commission authorizes the construction activities as outlined in the proposed licence. OPG is to submit to CNSC staff an environmental management plan, construction verification plan, and the project design requirements prior to the commencement of construction activities, as contemplated in licence condition 15.1.
191. The Commission takes notice of OPG's commitment to submit to CNSC staff a report confirming the need for any of the proposed structure(s) for which the necessity of that structure(s) is contingent upon future regulatory and licensing decisions that may occur during the WWMF licence period, prior to the commencement of construction activities. Under CNSC staff's proposed licence condition 15.2, for the structures listed in Table 2 of Appendix A of the licence, the Commission will first have to accept a commissioning report submitted by OPG, before operation may commence. With respect to the structures listed in Table 3 of Appendix A, the Commission by this decision delegates the acceptance of a commissioning report as recommended in section 4.11 of CMD 17-H3, to the staff positions there listed.
192. The Commission accepts the delegations of authority as recommended in section 4.11 of CMD 17-H3, except in the case of the acceptance of the commissioning report for the structures list in Table 2 of Appendix A of the licence, as detailed in the above paragraph.
193. The Commission also wishes to make it clear, and to address the concerns raised by the SON, that this licence is not prejudging the outcome of future regulatory decisions pertaining to waste management at the Bruce NGS site.

194. With this decision, the Commission directs CNSC staff to report annually on the performance of the WWMF as part of an annual *Regulatory Oversight Report*. CNSC staff shall present this report at a public proceeding of the Commission, where members of the public will be able to participate.

A handwritten signature in blue ink, appearing to read "M. Binder", is written over a horizontal line.

MAY 29 2017

Michael Binder
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

Historic Saugeen Métis, represented by P. McArthur, G. Govier and G. Wiechert	17-H3.11 17-H3.11A
Métis Nation of Ontario, represented by P. Richardson, D. Dusome, L. Duval, A. Alibhai and G. Conacher	17-H3.18
Eugene Bourgeois and A. Tilman	17-H3.20 17-H3.20A
Canadian Nuclear Association, represented by J. Barrett and S. Coupland	17-H3.16
Saugeen Ojibway Nation, represented by A. Monem and R. Kahgee	17-H3.12
Bruce Power, represented by J. Scongack	17-H3.10
Frank Greening	17-H3.2 17-H3.2A
Hydro Pensioners of Ontario, Georgian Bay District Pensioners Association, Bruce Sub Group	17-H3.3
Hydro Pensioners Association of Ontario, Toronto District	17-H3.4
County of Bruce	17-H3.5
The Inverhuron Committee	17-H3.6
Council of the Corporation of the Municipality of Kincardine	17-H3.7
Corporation of the Township of Huron-Kinloss	17-H3.8
Kincardine and District Chamber of Commerce	17-H3.9
Power Workers' Union	17-H3.13
Canadian Nuclear Laboratories	17-H3.14
Canadian Nuclear Workers' Council	17-H3.15
Town of Saugeen Shores	17-H3.17
Board of Health for the Grey Bruce Health Unit	17-H3.19