



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

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SUPPLEMENTAL/COMPLÉMENTAIRE

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Commission Request for Information

Demande d'information de la Commission

***Regulatory Oversight
Report for Canadian
Nuclear Power
Generating Sites: 2017***

***Rapport de surveillance
réglementaire des sites de
centrales nucléaires au
Canada : 2017***

Public Meeting

Réunion publique

Scheduled for :

8 November 2018

Prévue pour :

8 novembre 2018

Submitted by:

CNSC Staff

Soumise par :

Le personnel de la CCSN

e-Doc 5643522 (WORD)

e-Doc 5690942 (PDF)

Summary

The purpose of this supplemental Commission Member Document (CMD) is to provide additional information to what is presented in CMD 18-M39, including:

- Updates on topics requested by the Commission at previous proceedings
- Update on follow-up to the Fukushima accident by licensees of nuclear power plants
- Explanations of how the regulatory oversight report (ROR) was enhanced in response to feedback from the previous year's ROR
- CNSC staff responses to comments received from interventions on the current report
- Errata to CMD 18-M39
- CNSC staff recommendations to close requests for information from the Commission

This CMD is for information.

Résumé

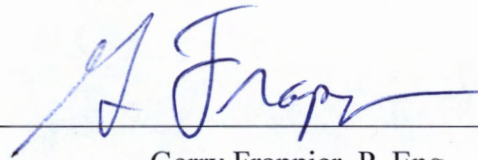
L'objectif de ce CMD supplémentaire est d'apporter des informations supplémentaires à ce qui est présente dans CMD 18-M39, comprenant :

- Les mises à jour demandées par la Commission lors des audiences précédentes
- La mise à jour sur le suivi de l'accident de Fukushima par les détenteurs de permis de centrales nucléaire
- Explications des améliorations apportées au Rapport de surveillance réglementaire des sites de centrales nucléaires au Canada en réponse à la rétroaction du Rapport de l'année précédent
- Les réponses du personnel de la CCSN aux commentaires reçus à travers les interventions pour le présent Rapport
- Les Errata au CMD 18-M39
- Les recommandations du personnel de la CCSN pour clore les demandes d'information de la Commission

Ce CMD est fourni à titre d'information seulement.

Signed/signé le

1 November 2018

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Gerry Frappier, P. Eng.

Director General

Directorate of Power Reactor Regulation

Directeur général de la

Direction de la réglementation des centrales nucléaires

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Haidy Tadros

Director General

Directorate of Nuclear Cycle and Facilities Regulation

Directrice général de la

Direction de la réglementation du cycle et des installations nucléaires

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EXECUTIVE SUMMARY

CMD 18-M39.A is a supplemental CMD to the *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites: 2017* (2017 NPGS ROR). One purpose of this supplemental CMD is to address the status of Commission requests for additional information arising from previous Commission Hearings and Meetings. These requests have been addressed in the NPGS ROR, this supplemental CMD, and/or the CNSC staff presentation of this report to the Commission. CNSC staff recommend that the Commission close 6 of the 7 requests.

There is one remaining request concerning the establishment of a proposed regulatory position on risk aggregation. CNSC staff will continue to provide regular, detailed updates on this topic through Regulatory Oversight Reports until the Commission confirms that the request has been satisfied.

This CMD also provides information on the status of the follow-up to lessons learned from the Fukushima accident by licensees of nuclear power plants, CNSC staff responses to interventions received on the 2017 NPGS ROR, changes in the ROR that resulted from comments on the 2016 ROR for nuclear power plants, and errata in CMD 18-M39 [2].

1. OVERVIEW

This CMD 18-M39.A is a supplemental CMD to the *Regulatory Oversight Report for Canadian Nuclear Power Generating Sites: 2017*, CMD 18-M39 (2017 NPGS ROR). The purpose of this supplemental CMD is the following:

- Provide CNSC staff responses to key interventions on the 2017 NPGS ROR
- Describe how interventions on the *Regulatory Oversight Report for Canadian Nuclear Power Plants: 2016* (2016 NPP ROR) enhanced the content of the 2017 NPGS ROR
- Describe how requests from the Commission for specific information have been addressed, including recommendation of closure of six associated Action Items on CNSC staff
- Provide an update on how licensees of nuclear power plants (NPPs) have followed up on the lessons learned from the Fukushima accident
- Identify errors in the 2017 NPGS ROR to be corrected before publication

Documents referenced in this CMD are listed at the end of this CMD and are available to the public upon request.

2. RESPONSES TO INTERVENTIONS ON 2017 NPGS ROR

The CNSC received six interventions from the public and non-governmental organizations concerning the 2017 NPGS ROR. CNSC staff responses to key topics identified in the interventions, and within the scope of the ROR, are provided in the following table. Although all topics covered in the interventions are not addressed in the table, CNSC staff are prepared to respond to any questions the Commission may have on topics raised in the interventions.

Comment	CNSC Staff Response
SOS Great Lakes: Licensee has not considered external hazards and their combined potential effect [CMD 18-M39.3]	REGDOC-2.4.2, <i>PSA for Nuclear Power Plants</i> requires licensees to analyze all internal and external hazards as well as the potential combinations of hazards. CNSC staff reviewed all Hazards Screening Analyses reports, which encompass the hazards mentioned by the intervenor, that were submitted by the licensee in accordance to REGDOC-2.4.2, and are satisfied with the results presented.
SOS Great Lakes and	Climate change is a regulatory area of interest to the CNSC as it is an important factor potentially affecting the

Comment	CNSC Staff Response
<p>Mr. Dalzell:</p> <p>There is a lack of consideration of climate change</p> <p>[CMD 18-M39.3]</p> <p>[CMD 18-M39.4, p.20]</p>	<p>protection of humans and the environment around the NPPs. CNSC regulatory oversight includes reviewing licensees' site specific environmental risk assessments and safety assessments which are updated every 5 years. The climate and understanding of the climate change and its implications are reflected in these updates as appropriate. Furthermore, CNSC remains abreast of climate change science through its Memorandum of Understanding with Environment and Climate Change Canada, conferences, and other activities.</p>
<p>SOS Great Lakes:</p> <p>There is a lack of information on the future activities that will influence the ongoing and future safety of the Bruce facility</p> <p>[CMD 18-M39.3]</p>	<p>The 2017 NPGS ROR is largely retrospective, covering safety performance in 2017 and some limited follow-up activities in 2018 to developments from 2017. Future activities were discussed during the Commission proceedings for the licence renewals for the Bruce facilities (2017 for Western Waste Management Facility and 2018 for Bruce A and B). Requirements for both the future operation of Bruce A and B and the Western Waste Management Facility, and the disclosure of information related to those operations, are provided in the operating licences for those facilities, their licence condition handbooks, and the Commission's Records of Decision for the renewals.</p>
<p>SOS Great Lakes:</p> <p>There are limited references to data or statistics in the descriptions of incidents, performance or improvements from which a peer reviewer could base a judgement of veracity of reporting</p> <p>[CMD 18-M39.3]</p>	<p>The 2017 NPGS ROR provides references to over 100 detailed inspection reports that helped form the basis of the general conclusions that were made. The conclusions were also partly based on the analysis of events at the NPPs and WMFs – many of those events are also described in the 2017 NPGS ROR. In addition, the ROR includes numerous tables and graphs with data on parameters such as doses to workers, releases to the environment, conventional health and safety incidents, reactor transients and maintenance backlogs. Any information or report cited in the ROR is available upon request.</p>
<p>SOS Great Lakes:</p> <p>A severe accident recovery assessment has never been conducted for a multiple emergency scenario at the Bruce Site, and its</p>	<p>The severe accident management guidelines (SAMGs) being discussed in the 2017 NPGS ROR are the licensees' guidelines to manage potential severe accident at their facilities. SAMGs employ the principles of cool, control, and contain to stop or limit the progression of accidents to severe accidents. They also provide for the transition to accident recovery, but are not intended to address off-site</p>

Comment	CNSC Staff Response
<p>effect on the Great Lakes, therefore, the claim that the effectiveness of severe accident management guidelines through ongoing exercises and plant drills at both Bruce A and B met acceptable standards, cannot be a true statement or assessment</p> <p>[CMD 18-M39.3]</p>	<p>recovery, which is the domain of the authority (province or municipality) having jurisdiction over off-site emergency preparedness and, specifically, off-site recovery following a nuclear emergency.</p> <p>During the most recent emergency exercise, Bruce power simulated a severe accident and exercised the SAMGs, including deployment of the emergency mitigating equipment. In addition, CNSC staff are currently assessing Bruce Power's SAMGs against the requirements in REGDOC-2.3.2, <i>Accident Management</i>. Off-site emergency preparedness for the Bruce site was assessed in the context of the recent licence renewal for Bruce A and B and was discussed at the associated Commission Hearing.</p>
<p>SOS Great Lakes: There is a lack of preparedness for emergencies</p> <p>[CMD 18-M39.3]</p>	<p>REGDOC-2.10.1, <i>Nuclear Emergency Preparedness and Response</i> requires all licensees to have emergency preparedness programs. CNSC staff are satisfied with all licensees' emergency preparedness programs implementation.</p>
<p>SOS Great Lakes: There is underreporting of incidents and a lack of communication by the operator to the public on incidents of release in air, water and to the ground for Bruce A and B</p> <p>[CMD 18-M39.3]</p>	<p>NPP licensees are required to submit reports to the CNSC, in accordance with REGDOC-3.1.1, <i>Reporting Requirements for Nuclear Power Plants</i>. This regulatory document was approved by the Commission following public consultation and public proceedings. REGDOC-3.1.1 requires the submission of scheduled reports on a quarterly and annual basis concerning various safety performance indicators, which include radiological airborne and waterborne releases to the environment as well as spills.</p> <p>In addition, event reports for situations or events of higher safety significance must be reported. The licensee will produce a Preliminary Event Report immediately and must submit a Detailed Event report within 60 days. All reports are tracked by CNSC staff through the Central Event Reporting and Tracking (CERTS) database.</p> <p>Licensees are also required to provide information to the local community and Indigenous groups about their operations, in accordance with RD/GD-99.3, <i>Public Information and Disclosure</i>. All NPPs have committed,</p>

Comment	CNSC Staff Response
	<p>through public disclosure protocols that were approved by the Commission, to post on their websites, a listing of CNSC regulatory event reports (quarterly); their environmental monitoring program detailing emissions and spills (annually); and communicating, as soon as reasonably possible, unplanned events exceeding regulatory limits or causing offsite effects that could result in public or media interest or concern.</p> <p>Concerning water quality at Baie du Dore, it is monitored by Bruce Power and reported to the CNSC annually. The concentrations of contaminants in water and sediments of Baie du Dore were used to assess potential risk to the human and ecological receptors (fish and wildlife) in the Environmental Risk Assessment (ERA, 2017) submitted to the CNSC in support of relicensing in 2018. The ERA is posted on the Bruce Power website. CNSC staff reviewed the ERA and concluded that there is no risk to ecological or human receptors in Baie du Dore.</p> <p>Bruce Power also has a long standing stakeholder commitment to keep local municipal water supply plants annual average tritium concentrations below 100 Bq/L. Bruce Power's 2017 environmental protection report provided details that concentrations at all local water supply plants were well below 100 Bq/L and a small fraction of the provincial drinking water limit of 7,000 Bq/L. Bruce Power's annual environmental protection reports are also available on the Bruce Power and CNSC websites.</p> <p>Other monitoring programs also confirm that the environment and health of persons around the Bruce nuclear site are protected. The Ontario Ministry of Labour's Ontario Reactor Surveillance Program and the Ontario Ministry of Environment and Climate Change's Drinking Water Surveillance Program results show that radioactivity activity levels have all been well below the respective drinking water standard and respective screening levels.</p> <p>These results are consistent with the CNSC's Independent Environmental Monitoring Program sampling in the Bruce area in 2013, 2015 and 2016. All results confirmed the public and the environment around the site are safe and</p>

Comment	CNSC Staff Response
	there are no expected health impacts.
<p>SOS Great Lakes on underreporting of incidents at the WWMF</p> <p>[CMD 18-M39.3]</p>	<p>No Event Initial Reports pertaining to the WWMF or the Radioactive Waste Operations Site-1 (RWOS-1) were submitted to the Commission for the period January 1, 2017 to June 1, 2018.</p> <p>OPG is required by Section 29 of the <i>General Nuclear Safety and Control Regulations</i> to report events to the CNSC. The ROR provides a discussion regarding each of the six events that occurred at the WWMF and that were reported to the CNSC in 2017. For each event, the licensee is required to submit a preliminary report to the CNSC immediately upon becoming aware of the event, and a full report within 21 days of becoming aware of it. The event details are provided in CMD 18-M39 [2] within the Safety and Control Area section that each were applicable to; the information provided includes details of the event, the impacts of the event (if any), CNSC staff's conclusion of the event, and the status of the event (open or closed).</p> <p>Licensees are also required to provide information to the local community and Indigenous groups about their operations, in accordance with RD/GD-99.3, <i>Public Information and Disclosure</i>.</p> <p>OPG is currently transitioning to REGDOC-3.1.2, <i>Reporting Requirements: Non-Power Reactor Class I Facilities and Uranium Mines and Mills</i> for the OPG waste management facilities, including the WWMF.</p> <p>In accordance with their licences and associated Licence Conditions Handbooks for the waste management facilities, OPG is required to submit scheduled reports on a quarterly and annual basis, which includes information regarding radiological airborne and waterborne releases to the environment, as well as spills.</p> <p>The reportable events discussed throughout the ROR regarding the OPG waste management facilities are also included in OPG's quarterly reports that are submitted to the CNSC, and are already posted on OPG's website.</p>
<p>SOS Great Lakes: There is no discussion of change management,</p>	<p>No construction occurred at the WWMF during the reporting period. The WWMF licence contains a list of buildings that OPG is authorized by the Commission to</p>

Comment	CNSC Staff Response
<p>or the timelines for future construction at the WWMF</p> <p>[CMD 18-M39.3]</p>	<p>construct. These buildings will be built on an as-needed basis, as determined by OPG. OPG submitted reports for an Environmental Risk Assessment and a Predictive Effects Assessment for the planned building construction; these reports are available upon request. Both reports were reviewed and accepted by CNSC staff and discussed in April 2017 during a public hearing before the Commission regarding the licence renewal for the WWMF.</p>
<p>Dr. Sandy Greer: Regulations are not sufficiently rigorous for licensing the DGR</p> <p>[CMD 18-M39.6]</p>	<p>The scope of the ROR includes facilities licensed by the CNSC in 2017. It is inappropriate for the CNSC to address OPG's DGR Project in the ROR because it was not, and is not, licensed by the CNSC (the proposal is currently with the Minister of Environment and Climate Change).</p>
<p>Dr. Sandy Greer: The Joint Convention and Canada's report to the Joint Convention are limited</p> <p>[CMD 18-M39.6]</p>	<p>The ROR does not cover the Joint Convention Report. The Joint Convention Report is publically available on the CNSC website and CNSC staff made a presentation on this subject to the Commission at a public meeting in August 2018.</p>
<p>Dr. Sandy Greer: Studies of the effects of radionuclides on the environment have been inadequate</p> <p>[CMD 18-M39.6]</p>	<p>CNSC staff stays current in environmental risk assessment practices by reviewing and contributing to literature and participating in relevant conferences and meetings, including updates of CSA Standard N288.6-12, <i>Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills</i>. CNSC staff also expect licensees to incorporate best practices and new science into their assessments.</p>
<p>CELA: Delays in establishing the Potassium Iodine (KI) Working Group (WG)</p> <p>[CMD 18-M39.5]</p>	<p>CNSC staff developed a draft Terms of Reference (ToR) for the WG in August 2018. The draft ToR was shared with the Office of the Fire Marshal and Emergency Management, and OPG for input. CNSC staff are currently revising the draft ToR to address the input received. The next revision of the draft ToR will be posted on the CNSC website in the very near future for a 30-day comment period to engage additional stakeholders, and obtain comments from the public and interested parties.</p> <p>Furthermore, OPG is currently compliant with REGDOC-2.10.1, <i>Nuclear Emergency Preparedness and Response</i>;</p>

Comment	CNSC Staff Response
	and consideration has been given to sensitive populations with respect to KI distribution within the Provincial Nuclear Emergency Response Plan (PNERP).
<p>CELA: Inadequate contingency plan for protecting drinking water in the event of a nuclear accident</p> <p>[CMD 18-M39.5]</p>	<p>Emergency preparedness plans have provisions for the protection of water during a nuclear emergency. The Provincial Liquid Emission Response Procedure (PLERP) outlines responsibilities in the event where radiation levels in nearby waters may exceed the MOECC standards.</p> <ol style="list-style-type: none"> 1. Local Medical Officer of Health (LMOoH) – can order precautionary and/or protective measures. 2. Community Emergency Management Coordinator (CEMC) – can implement precautionary and/or protective measures when directed by LMOoH Municipal Works Department (MWD) – arrange for reservoirs to be filled. <p>The Provincial Liquid Emission Response Procedure outlines the response to liquid discharges with abnormal levels of radioactivity from OPG and Bruce Power. It is noted that this is the province’s jurisdiction.</p>
<p>Gordon Dalzell: Potential improvements to public communication</p> <p>[CMD 18-M39.4]</p>	<p>Currently, all licensees are subject to requirements in RD/GD-99.3, <i>Public Information and Disclosure</i>. CNSC staff are satisfied that licensees programs meet regulatory requirements.</p> <p>CNSC staff defer to licensees to determine their target audience and their interests given the concerns that information is not consistently made available on multiple communications platforms. Based on the intervention, CNSC will encourage licensees to continue to further identify target audiences and general public communication tactics.</p>
<p>Gordon Dalzell: Rating category definitions should be refined</p> <p>[CMD 18-M39.4, p. 53]</p>	<p>CNSC staff will take the recommendation on definitions of ‘Satisfactory’ and ‘Fully Satisfactory’ into consideration if and when a review of the definitions is conducted.</p>

3. FOLLOW UP ON INTERVENTIONS AND COMMENTS ON 2016 NPP ROR

The following table provides some information on key suggestions stemming from public interventions and comments from the Commission on the 2016 NPP ROR. These are suggestions that resulted from the posting and discussion of the 2016 NPP ROR and which had the potential to change the content of the 2017 NPGS ROR. The update column indicates, in each case CNSC staff response and any enhancements made in the 2017 NPGS ROR based on these suggestions.

Suggestion	CNSC Staff Update
<p>Include more detailed information on management, condition and assessment of irradiated fuel bays</p> <p>[CMD17-M15.7, p. 2-3]</p>	<p>More information on the assessment of irradiated fuel bays was provided in section 2.4 (page 37) of the 2017 NPGS ROR. CNSC staff will continue to provide updates in future ROR on this topic.</p>
<p>Indigenous peoples should be more deeply involved in review of licensee scheduled reporting documents</p> <p>[CMD 17-M15.4, p. 16-18]</p>	<p>Section 2.15 (page 74) of the 2017 NPGS ROR describes how CNSC staff have been open to discuss all issues of interest to Indigenous communities, including the licensees' scheduled reports to the CNSC. CNSC staff continue to work with the licensees to ensure that scheduled reports are provided to interested Indigenous communities and organizations.</p> <p>In addition, the CNSC is implementing a Long-Term Indigenous Engagement Strategy to ensure staff are engaging in meaningful, on-going dialogue with interested Indigenous communities throughout the life-cycle of CNSC regulated facilities. CNSC staff meet regularly with Indigenous communities including leadership and Elders with the goal of building and maintaining trust.</p> <p>CNSC staff are currently in discussions with Indigenous groups, such as Metis Nation of Ontario and Saugeen Ojibway Nation, on formalizing long term relationships.</p>
<p>Consider adding a section on knowledge management in the NPGS ROR</p> <p>[CMD 17-M15.2]</p>	<p>There is no consolidated information on knowledge management in the 2017 NPGS ROR because requirements pertaining to knowledge management are found throughout the safety and control areas and specific areas (e.g., operating experience, safety culture, human performance program, personnel training, procedures, security practices, nuclear emergency preparedness and response). The CNSC does not specifically prescribe how the licensees are to</p>

Suggestion	CNSC Staff Update
	<p>manage knowledge in their organizations, but licensees are expected to ensure that all knowledge management elements are implemented.</p> <p>CNSC staff are aware that NPP and WMF licensees do have extensive provisions to manage knowledge within their organizations, as described in the 7th Canadian report to the Convention on Nuclear Safety and the 6th Canadian Report to the Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management.</p>
<p>Data on Industrial Safety Accident Rate (ISAR) should include data for contractors</p>	<p>In the Commission Meeting for the 2016 NPP ROR 11, Commissioners mentioned that it would be useful to have ISAR data for contractors at NPPs, as this would be an important element of the overall performance in light of ongoing refurbishment activities.</p> <p>CNSC staff requested the additional data on contractors' ISAR data on from the licensees, but at this time most licensees responded that they could not provide all of the data necessary to calculate the ISAR rate. The Industrial safety accident rate is the number of lost time injuries per 200,000 person hours worked. The number of lost time injuries is available, but the numbers of person hours worked by contractors was not readily available to be reported by all licensees.</p> <p>CNSC staff will continue to work with the licensees to enable the reporting of contractor ISAR data.</p>
<p>ROR should clarify regulatory oversight with respect to safety performance indicators (Commission Meeting)</p>	<p>In the discussion of the 2016 NPP ROR 11, the Commission asked for clarification of CNSC staff's regulatory oversight of safety performance indicators related to maintenance.</p> <p>Information on CNSC staff's monitoring of the licensees' safety performance indicator data, with a description of follow-up activities in the compliance program for adverse trends, is provided in section 1.4.4 of the 2017 NPGS ROR. Section 2.6 describes the topic in more detail for the safety performance indicators related to maintenance.</p>
<p>The measure of collective dose at licensed facilities has</p>	<p>In the Commission Meeting for the 2016 NPP ROR 11, the Commission discussed the regulatory value of data on collective dose at the NPPs and WMFs.</p>

Suggestion	CNSC Staff Update
<p>uncertain value from a regulatory perspective (Commission Meeting)</p>	<p>Annual collective dose is defined as is the sum of all effective doses assigned to all individuals, including contract staff and visitors, exposed to ionizing radiation for a given licensed activity in a year. It is measured in person-sieverts (p-Sv). There is no regulatory dose limit for the annual collective dose; however, collective dose is used internationally as a benchmark for assessing the effectiveness of the licensee's performance in keeping doses as low as reasonably achievable (ALARA).</p> <p>Fluctuations in collective dose over time are generally a function of the activities undertaken by the licensee. For routine operations at NPPs, variations in collective dose between years are attributed partly to how long the plant operated during each year as well as to typical dose rates associated with the station's operation. The outage collective dose (planned and forced) will vary due to factors such as the number of outages for the year, the scope and duration of the work, the number of workers involved and dose rates associated with the outage work.</p> <p>While collective dose is a useful parameter to monitor over time in assessing the application of ALARA, it is not used as a measure of what is safe.</p> <p>NPP licensees report collective dose information to the CNSC on a quarterly basis as required by REGDOC 3.1.1 (i.e., safety performance indicator #1-Collective Radiation Exposure). CNSC staff review collective dose results and will discuss any observed trends with licensees to ensure that licensees continue to effectively manage exposures ALARA.</p> <p>Although the 2016 NPP ROR provided collective dose data and trends for each operating NPP, it did not provide any observation or conclusion about the detailed data. The 2017 NPGS ROR does not include the trend graphs of collective dose data for individual facilities. However, a small table of collective dose data for the operating NPPs was retained in section 2.7 of the 2017 NPGS ROR to illustrate the general breakdown of worker dose at NPPs (routine operations vs. outages, and internal vs external doses).</p>

4. FOLLOW UP ON SPECIFIC REQUESTS FOR INFORMATION FROM THE COMMISSION

In addition to the suggestions for additional information that were made in the context of the review of the 2016 NPP ROR, as discussed in section 3 above, the Commission also requested, specific information to be presented in the 2017 NPGS ROR. These requests were made in the context of recent licence renewal Hearings or Commission Meetings. Important requests for such information are captured in the Regulatory Information Bank (RIB) used by CNSC staff. The RIB numbers in this supplemental CMD refer to specific entries in this database, which CNSC staff track to closure.

The following table describes how specific requests for information from the Commission have been addressed. Where appropriate, the table indicates the Action Items for which CNSC staff confirm the action has been completed. That is, for those requests, CNSC staff are of the opinion that the information provided has addressed the underlying issue and that open items will continue to be addressed in future RORs.

Action	CNSC staff response
<p>At the March 15th 2018 Commission Meeting, CNSC staff presented information regarding the failure of a pump gland seal, in the Bruce Unit 4 primary heat transport system, that resulted in a heavy water leak. [CMD 18-M13 [10]]</p> <p><i>“The Commission expects that additional information will be presented following completion of forensic investigations and root causes analyses.”</i></p> <p>[Minutes of CMD 18-M13 [15]] [RIB 14050]</p>	<p>CNSC staff reported on the follow-up to this event in section 3.4.0 of the 2017 NPGS ROR.</p> <p>Bruce Power completed the root cause investigation into the seal failure and submitted it to CNSC staff. CNSC staff reviewed the submission and concluded that Bruce Power adequately identified the Direct Cause, Root Cause and Contributing Causes of the event and that actions are in place to prevent recurrence. CNSC staff acknowledged that Bruce Power has implemented a design change to prevent it from recurring.</p> <p>CNSC staff request that the Commission close this request.</p>
<p>The 2017 Commission hearing for the licence renewal for the Pickering Waste Management Facility (PWMF) led to a request for confirmation of OPG’s disclosure of data.</p>	<p>Section 3.2.15 of the 2017 NPGS ROR reported that OPG had provided the requested data on its Website.</p> <p>CNSC staff request that the Commission close this request.</p>

<p><i>“The Commission encourages OPG to make available to the public data on contaminants of primary concern and directs that CNSC staff report on the status of public disclosure by OPG as part of the NPP ROR.”</i></p> <p>[Record of Decision paragraph 270 [5]] [RIB 12727]</p>	
<p>The 2017 Commission Hearing for the licence renewal for the PWMF led to a request for both licensees and CNSC staff to use more precise language when describing results related to environmental protection (specifically, the releases at the Pickering site that are attributable to PWMF.</p> <p><i>“The Commission asks that CNSC staff and licensees/applicants use less ambiguous terminology such as “very minor percentage” in submissions to the Commission. The Commission directs CNSC staff to provide the Commission with clarification in regard to what is represented by “very minor percentage” and expects that, in future submissions to the Commission, terminology with a higher degree of accuracy will be used.”</i></p> <p>[Record of Decision paragraph 169 [5]] [RIB 12728]</p>	<p>As shown in Annex B Table 4, the total airborne beta and gamma particulates released from the PWMF has remained below 0.6% of the total Pickering site emissions from 2015 – 2017. As shown in Annex Table 5, the total contribution of waterborne tritium releases from the PWMF has remained below 0.2% of the total Pickering site emissions from 2015 – 2017.</p> <p>Based on the information provided in Annex B, CNSC staff request that the Commission close this request.</p>
<p>At the December 14, 2017 Commission Meeting, CNSC staff presented information on emergency preparedness, including the results of the full-scale, emergency preparedness exercise (Exercise Unified Control) at Pickering Nuclear Generating Station on December 6 and 7, 2017.</p> <p><i>“In light of the emergency planning gaps identified in the Annual Report 2017 of the Office of the Auditor General of Ontario (Annual Report 2017), the Commission</i></p>	<p>CNSC staff reviewed the Annual Report 2017 and reported that they were satisfied with how the findings are being addressed in the context of the overall nuclear emergency response network in Ontario. The results of the review are provided in section 2.10 of the 2017 NPGS ROR.</p> <p>CNSC staff request that the Commission close this request, as far as it concerns reporting in the NPGS</p>

<p><i>asked about how this report would be considered in CNSC staff's review of the exercise. CNSC staff explained that Annual Report 2017 focussed primarily on actions that the province should consider as part of their emergency management preparedness strategies. Additionally, CNSC staff clarified that the scenario for Exercise Unified Control was developed prior to the release of the Annual Report 2017 and that the timing of the release of the report did not impact the conduct of the exercise. CNSC staff confirmed to the Commission's satisfaction that it would review Ontario's Annual Report 2017 and consider potential improvements to CNSC-regulated emergency management processes. CNSC staff also stated that consideration of the Annual Report 2017 would be included in CNSC staff's presentation to the Commission about the exercise at a later date."</i></p> <p>[Minutes of December 14, 2017 meeting, line 11 [13]] [RIB 12616]</p>	<p>ROR.</p> <p>CNSC staff will provide information on its assessment of Exercise Unified Control at a future Commission meeting.</p>
<p>The 2017 Commission Hearing for the licence renewal for the Point Lepreau Nuclear Generating Station (PLNGS) led to a request for updates on corrective action for NB Power's that was outstanding at the time.</p> <p><i>"In light of the information provided and the information examined by the Commission for this hearing, the Commission is satisfied that the outstanding corrective actions at the PLNGS are of lower safety significance and are being adequately addressed. The Commission expresses, however, its dissatisfaction at the number of outstanding corrective actions required to be completed by NB Power to meet regulatory requirements and fully expects NB Power to address these issues as soon as practicable. The Commission</i></p>	<p>At the time of the licensing hearing, CNSC staff had 46 Action Items open for NB Power. Since then, CNSC staff closed 37 of these Actions Items. Only 9 Action Items remain open; they are proceeding according to schedule and CNSC staff are satisfied with current progress.</p> <p>CNSC staff reported on one of the key corrective actions under the heading procedures in section 3.3.3 of the 2017 NPGS ROR.</p> <p>Appendix A of this supplemental CMD provides information on Action Items identified in the Commission's Record Of Decision. It also indicates the page numbers in section 3.3 of the 2017 NPGS ROR where they are discussed.</p>

<p><i>directs CNSC staff to provide annual updates on the status of the outstanding corrective actions for NB Power during the annual NPP ROR.”</i></p> <p>[Record of Decision for the 2017 PLNGS, line 452] [RIB 11805]</p>	<p>CNSC staff request that the Commission close this request.</p>
<p>In March 2014, the Commission requested CNSC staff to establish a regulatory position on risk aggregation that would include multi-unit aspects as well as safety goals.</p> <p>[Minutes of March 27, 2014 Commission meeting 14, line 11]</p> <p><i>Risk aggregation is a topic related to whole-site probabilistic safety assessment (PSA) and Canada is the first country to request the development of a pilot whole-site PSA (for Pickering Nuclear Generating Station [licence renewal hearing in 2013]. The general expectation from a whole-site PSA is to calculate the integrated risk taking into account inter-unit interactions and human interactions. It is internationally accepted that time is needed for building a state of practice before any regulatory requirements on whole-site PSA can be established.</i></p> <p><i>The Commission requested CNSC staff to provide an update in November 2018, along with other PSA-related action items.</i></p> <p>[RIB 8504]</p>	<p>As described in Appendix A, <i>Regulatory Role of Probabilistic Safety Assessment</i> of CMD 17-M37, the CNSC is currently engaged in international cooperative efforts along with the IAEA and OECD/NEA for the development and implementation of whole-site PSAs which includes risk aggregation for all units on site. This action will be completed after the results of the initiatives on the whole-site PSA, which are led by CNSC, are completed. This work is scheduled to be completed in 2019.</p> <p>CNSC staff have reported on this ongoing work in section 2.4 of the 2017 NPGS ROR and will continue to update the Commission in future RORs.</p> <p>CNSC staff recommend that this request remain open.</p>
<p>At the March 15, 2018 Commission Meeting, CNSC staff presented information regarding an internal (alpha) contamination event that occurred at the Darlington Nuclear Generating Station refurbishment retube waste processing building.</p> <p><i>“The Commission expects that an update will be provided following the availability</i></p>	<p>CNSC staff provided an update to the Commission on August as part of the NPP status report (CMD 18-M41). In addition, CNSC staff have provided information on the enhanced oversight of alpha monitoring and control in the presentation of the 2017 NPGS ROR (CMD 18-M39.A).</p>

<p><i>of additional information and inspections.”</i> (Minutes of March 15, 2018 Meeting 15, line 30)</p> <p>[RIB 14051]</p>	<p>CNSC staff request that the Commission close this request.</p>
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5. FOLLOW-UP TO FUKUSHIMA BY NPP LICENSEES

In the follow up to the Fukushima Daiichi accident, CNSC staff assigned 36 Fukushima Action Items (FAIs) to the NPP licensees. By December 2015, CNSC staff had closed all of them. However, staff opened 43 station specific action items to track, through the compliance verification program, individual projects at the NPPs that were necessary to complete improvements stemming from the Fukushima lessons-learned. The station specific action items varied from NPP to NPP, depending on design and operational considerations. In total, only 5 of the 43 station specific action items now remain open.

Of the 13 station specific action items initially opened for Bruce Power, only 3 remain open. They are all due for closure by the end of 2019:

Shield tank overpressure protection (STOP)

In the event of a beyond design basis accident, the shield tank may act as the primary source of heat removal. The function of the STOP is to prevent the failure of the shield tank due to overpressure by passively discharging excess steam from the top of the shield tank back to containment. The STOPS will be installed during planned outages.

Containment filtered venting system

In the event of a severe accident where the containment heat sink is lost (as a result of a loss in electrical power) and containment overpressure occurs, the new containment filtered venting system will maintain the containment pressure below the failure pressure and filter radioactive releases during a severe accident. This is a more robust system than the existing systems in place for emergency filtered venting.

Coolant makeup

For short-term makeup water, Bruce Power has installed connection points to the steam generators, which will provide short and longer-term makeup water to cool the reactor in the event of a severe accident. For longer-term makeup water, a connection point to the shield tank has been installed. The remaining connection points to the heat transport and moderator system for longer-term makeup water will be completed during planned outages.

Of the 11 station specific action items initially opened for Point Lepreau, only 1 remains open, the *Evaluation of emergency response to malevolent aircraft impact*. It is expected to be closed by the next regular update, which is due in March 2019.

Of the 9 station specific action items initially opened for Darlington, only 1 remains open, to track the *Implementation of emergency mitigating equipment (EME) and telecommunications projects*. OPG requested closure of this action item during its last update in August 2018. CNSC staff are currently reviewing OPG's request.

All of 9 station specific action items initially opened for Pickering are now closed. The single station specific action item initially opened for Gentilly-2 is now closed.

Although the station specific action items are either complete or close to completion, continuous enhancements to safety is ongoing, as needed, to further improve the measures already put in place to address Fukushima lessons learned.

6. ERRATA

CNSC staff identified minor errors in the 2017 NPGS ROR. Prior to publication, the following errors will be corrected in the report:

- On page 39, section 2.4, the specific area Management of Safety Issues, erroneously stated that the power reactor licensees reports submitted in 2017 on safety-related research and development had not fully met the reporting requirements of REGDOC-3.1.1, *Reporting Requirements for Nuclear Power Plants*. To clarify, all power reactor licensee reports submitted on safety-related research and development did meet the requirements of REGDOC-3.1.1.
- On page 98, section 3.1.7 erroneously stated that the rating of the Radiation Protection SCA for Darlington Nuclear Generating Station had not changed between 2016 and 2017. In fact, the rating did change from “Fully Satisfactory” in 2016 to “Satisfactory” in 2017.
- On page 142, section 3.2.11 state that the rating of the waste management SCA for Pickering Nuclear Generating Station changed from “Satisfactory” in 2016 to “Fully Satisfactory” in 2017. However, that SCA was actually rated “Fully Satisfactory” in 2016 also, so there was no change.
- Section 3.3.3 omitted a summary of CNSC staff's assessment of NB Power's revision of its abnormal operating procedures (which were completed to the satisfaction of CNSC staff).
- On page 157, section 3.3.5 describes the follow-up to an inspection at Point Lepreau related to cables. The text indicates that corrective actions are ongoing. In fact, corrective actions related to cables were completed in 2017, but there remains a corrective action with respect to battery testing that was not mentioned in the ROR.

- On page 205, section 3.5.2 states that OPG has committed to full implementation of *REGDOC-2.2.4, Fitness for Duty, Volume II: Managing Alcohol and Drug Use* by July 1, 2019. The date for implementation of all requirements except random testing is July 1, 2019. The date for full implementation, including random testing, is planned for December 2019.
- On page 213, section 3.5.9, figure 22 has an incorrect Carbon-14 value (0.1748%) for WWMF air emissions. In fact, the correct value is 0.0004%, which would make the corresponding bar in the chart extremely small.
- On page 229, section 3.6.7 states “*The maximum dose received by a worker in 2017 was 1.6 mSv, which is approximately 3.2% of the regulatory dose limit.*” The correct maximum dose received by a worker in 2017 was 1.16 mSv, which is approximately 2.3% of the regulatory dose limit.
- On page 264, Appendix F is titled “*LICENCE AMENDMENTS AND LICENCE CONDITIONS HANDBOOK REVISIONS*”. Since licence amendments are not discussed in this appendix, the title should be “*LICENCE CONDITIONS HANDBOOK REVISIONS*”.
- On page 289, the rows in table J.4 (inspection reports for Point Lepreau) should read as follows.
 - Under the rows for Operating Performance SCA, the second last row (site outage inspection) should be deleted.
 - The row for Fitness for Service SCA (instrument calibration) should be replaced by two rows – one for chemistry control (GLPRD-2017-011) and one for maintenance planning and scheduling (GLPRD-2017-018).

7. CONCLUSION

This CMD demonstrates how CNSC staff took interventions and comments on the 2016 NPP ROR into account when developing the 2017 NPGS ROR. It also provides CNSC staff responses to interventions received on the 2017 NPGS ROR, as well as identifies errors in the 2017 NPGS ROR.

Further, this CMD shows the status of the Commission information requests to CNSC staff that are or will be addressed through the 2017 NPGS ROR, this supplemental CMD, and CNSC staff’s presentation at the November 2018 Commission Meeting. CNSC staff have provided responses and recommend the closure of six Action Items for information as requested by the Commission. CNSC staff will provide updates on the remaining Action Item concerning the Establishment of Proposed Regulatory Position on Risk Aggregation until at least 2019 when the international initiatives on the whole-site PSA will be completed.

This CMD also describes how NPP licensees have followed-up on the lessons learned from the Fukushima accident – most of the actions required by CNSC have been completed and the remaining actions on licensees are scheduled to be addressed by 2019.

REFERENCES

1. Letter, L. Morton (OPG) to M. Leblanc (OPG), “Supplemental OPG Written Submission in Support of the 2014 and 2017 Environmental Risk Assessments for the Pickering Waste Management Facility’s Waste Facility Licence Renewal”, August 18, 2017, e-Doc 5322644.
2. CMD 18-M39 – Regulatory Oversight Report for Canadian Nuclear Power Generating Sites: 2017 - November 8, 2018, e-Doc 5628442.
3. CMD 18-M39.B – 2017 NPGS ROR Presentation - November 8, 2018, e-Doc 5628148.
4. CMD 17-H5 – Submission from CNSC staff for OPG PWMF Licence Renewal February 10, 2017, e-Doc 5186356.
5. Record of Decision on Application by OPG for Renewal of Licence for Pickering Waste Management Facility, February 6, 2018, e-Doc 5345395.
6. CMD 17-M15.B – Presentation (REVISED) from CNSC staff on the Regulatory Oversight Report for Canadian Nuclear Power Plants: 2016, August 9, 2016, e-Doc 5272946.
7. CMD17-M15.7 – Written submission from Northwatch, August 9, 2016, e-Doc 5300770.
8. CMD 17-M15.4 – Written submission from the Métis Nation of Ontario, August 9, 2016, e-Doc 5300694.
9. CMD 17-M15.2 – Written submission from JMH Technology, August 9, 2016, e-Doc 5300572.
10. CMD 18-M13 – Event Initial Report – Bruce Power – Bruce A Unit 4 - Failure of the primary heat transport pump seals, e-Doc 5477231.
11. Minutes of the August 16 and 17, 2017 Commission Meeting, e-Doc 5378251.
12. Transcript of Commission Meeting of August 16, 2017, e-Doc 5328797.
13. Final Minutes of the December 13-14, 2017 Commission Meeting, e-Doc 5483920.
14. Minutes of the March 27, 2014 Commission Meeting, e-Doc 4431644.
15. Final Minutes of the March 15, 2018 Commission Meeting, e-Doc 5541768.

ANNEX A ADDITIONAL DETAILS FOR ACTIONS ASSOCIATED WITH PLNGS

The following table provides additional information related to specific issues identified in the Commission Record of Decision for the 2017 renewal of the operating licence for Point Lepreau Nuclear Generating Station.

Reference	Topic	CNSC Staff Update
Para #13, 50	Implement Corrective Action (CA) plan and increased regulatory oversight in the Management System SCA	Discussed in slide 45 of the CMD 18-M39.B. All Action Items related to the Management System SCA are now closed.
Para # 56, 74	Improvements for the Fuel Handling Operator Training Program (FHTP) (CA)	Quarterly updates on the FHTP from New Brunswick Power (NB Power) are being reviewed by CNSC staff. All remaining Action Items are progressing well, and are due to be completed by December 20, 2018. NB Power is requested to provide a final update which confirms completion by January 2019.
Para # 96	Improvement of the PLNGS Abnormal Plant Operating Procedures (CA)	Discussed on page 154 of 2017 NPGS ROR. CNSC staff are satisfied with NB Power's improvements to Abnormal Plant Operating Procedures. Action item closed by CNSC staff in July 2017.
Para # 104	Inspection findings related to operating performance (CA)	Discussed on page 154 of 2017 NPGS ROR. CNSC staff closed associated Action Item in July 2018.
Para # 142	Status of the PLNGS-specific Fukushima Action Items	All PLNGS-specific Fukushima Action Items are now closed.
Para # 163	Aging management program for cables	Discussed on page 157 of 2017 NPGS ROR.
Para # 190	PLNGS maintenance backlog and preventive maintenance deferrals	Discussed on page 158-159 of 2017 NPGS ROR.

Reference	Topic	CNSC Staff Update
Para # 197	Areas for improvement related to the system health monitoring process (CA)	Discussed on page 158 of 2017 NPGS ROR. CNSC staff are satisfied with the improvements made to the system health monitoring process and closed the associated Action Items.
Para # 272	Update on PLNGS thermal plume assessment	Discussed on page 164 of 2017 NPGS ROR.
Para # 292	DFO decisions made under the FA	Discussed on page 150 of 2017 NPGS ROR.
Para # 337, 338	The new PLNGS Off-site Emergency Operations Centre	Discussed on page 165 of 2017 NPGS ROR.
Para # 347	NB Power nuclear emergency technical planning basis	The New Brunswick Emergency Measures Organization (NBEMO) issued the new Point Lepreau Nuclear Off-Site Emergency Plan in August 2018 and made it available online.
Para # 442	NB Power's compliance with the Nuclear Liability and Compensation Act	Discussed on page 76 of 2017 NPGS ROR.
Para # 445	Implementation of REGDOCs and standards	Presented in Appendix E of 2017 NPGS ROR.
Para # 462	Safety Performance Indicators of interest to the Commission and the public	Discussed on page 144 of 2017 NPGS ROR.

ANNEX B
ADDITIONAL DETAILS FOR CONTRIBUTION OF TOTAL
AIRBORNE BETA AND GAMMA PARTICULATES FROM PWMF

Table: The total contribution of airborne beta and gamma particulates from the PWMF compared to the overall emissions from the Pickering site

Year	PWMF	Total Pickering Site Emission	Percent contribution from PWMF
2015	1.8E+05 Bq	2.3E+07 Bq	0.78%
2016	8.6E+04 Bq	3.0E+07 Bq	0.29%
2017	<1.8E+05 Bq	2.0E+08 Bq	0.09%

Table: the total contribution of waterborne tritium from the PWMF compared to the overall emissions from the Pickering site

Year	PWMF	Total Pickering Site Emission	Percent contribution from PWMF
2015	4.21E+11 Bq	3.7E+14 Bq	0.11%
2016	6.12E+11 Bq	3.2E+14 Bq	0.19%
2017	2.59E+11 Bq	3.8E+14 Bq	0.068%