



Minutes of the Canadian Nuclear Safety
Commission (CNSC) Meeting held on
April 27, 2021

Minutes of the Canadian Nuclear Safety Commission (CNSC) meeting held over a virtual platform on April 27, 2021 at 9:30 a.m. The meeting was webcast live via the CNSC website, and video archives are available on the CNSC's website. These minutes reflect both the public meeting itself and the Commission's deliberations as a result of the meeting.

Present:

R. Velshi, President
T. Berube
S. Demeter
M. Lacroix
S. McKinnon
I. Maharaj

M. Leblanc, Secretary
L. Thiele, Senior General Counsel
D. MacDonald, M. McMillan and M. Young, Recording Secretaries

CNSC staff advisors were: A. Viktorov, R. Jammal, H. Tadros, K. Owen-Whitred, K. Murthy, M. Broeders, L. Shuparski-Miller, P. Burton, J. Truong, J. Brown, J. Smith, A. Levine, N. Kwamena, D. Wylie, S. Faille, B. Theriault and C. Purvis

Other contributors were:

- Ontario Power Generation Inc.: V. Bevacqua, J. Vecchiarelli, S. Irvine, S. Granville and A. Grace
- New Brunswick Power: J. Nouwens, M. Power, N. Reicker, K. Duguay and J. Armstrong
- Canadian Light Source Inc.: G. Cubbon
- Nuclear Waste Management Organization: L. Swami, B. Watts, L. Morton, D. Wilson, L. Frizzell and M.B. Belfadhel
- Impact Assessment Agency of Canada: S. Carriere
- Independent Advisory Group: P. Van Geel
- Natural Resources Canada: J. Delaney
- Jubilant Draximage Inc.: K. Chettah and N. LaFrance

Constitution

1. With the notice of meeting Commission member document (CMD) [21-M12](#) having been properly given and a quorum of Commission members being present, the meeting was declared to be properly constituted.
2. Since the Commission meeting held on January 21, 2021, [CMD 21-M13 to CMD 21-M18](#) were distributed to members. These documents are further detailed in Appendix A of these minutes.

Adoption of the Agenda

3. The agenda, [CMD 21-M13](#), was adopted as presented.

Chair and Secretary

4. The President chaired the meeting of the Commission, assisted by M. Leblanc, Secretary and D. MacDonald, M. McMillan and M. Young, Recording Secretaries.

Minutes of the CNSC Meetings Held December 2020 and January 2021

5. The Commission noted that the minutes of the [December 8-9-10, 2020](#) and [January 21, 2021](#) Commission meetings were approved secretarially before the meeting¹.

STATUS REPORT ON POWER REACTORS

6. With reference to [CMD 21-M16](#), the Status Report on Power Reactors, CNSC staff spoke to the following updates:
 - Darlington Nuclear Generating Station (NGS) Unit 1 was at 99.5% full power (FP) and was returning to FP;
 - Pickering NGS Unit 1 was at 96% FP due to fuel handling system maintenance;
 - Point Lepreau NGS was operating at less than 1% FP following restart after an unplanned outage due to a turbine exhaust rupture disk failure; and
 - Under [REGDOC 3.1.1 Reporting Requirements for Nuclear Power Plants](#), one additional COVID-19 case was identified at the Darlington NGS, and three additional COVID-19 cases were identified at the Pickering NGS.

¹ The approved minutes were published on the CNSC website on May 28, 2021.

Discussion

7. With respect to the primary heat transport pump motor fire at the Point Lepreau NGS in February 2021, as presented in [CMD 21-M16.1](#), the Commission enquired as to whether preventive maintenance could have identified the degradation that led to the fire. The New Brunswick Power Corporation (NB Power) representative explained that preventive maintenance includes visual inspections of the degraded component; however, this event had demonstrated that inspections that are more intrusive are required. Per procedure, NB Power initiated a root cause evaluation to identify specific corrective actions and prevent reoccurrence.
8. The Commission asked for details regarding how NB Power assesses and controls fire risk at Point Lepreau NGS. The NB Power representative explained that every area of the station has firefighting equipment staged according to a pre-deployment plan and that emergency responders are trained on how to respond to a fire in each specific area.
9. With respect to the irradiated fuel bundle stuck in the fueling machine at Pickering NGS, a representative from Ontario Power Generation Inc. (OPG) stated that the last similar event occurred in 1993 and that OPG had treated the retrieval as a first-of-a-kind evolution. The representative stated that workers retrieved the bundle remotely, with no dose uptake, explaining that OPG had developed and validated the retrieval procedures in mock-ups prior to execution.
10. The Commission sought more information on the damage to the irradiated fuel bundle. The OPG representative explained that the fuel pencils had separated from the bundle's endplate. The individual pencils were not damaged. The bundle is being stored in the irradiated fuel bay and OPG will inspect the bundle in the future as part of a long-term program to remove damaged bundles from the bay. CNSC staff explained that fuel bundle damage is rare and that minor bundle damage occurs once to twice a year, at most. The OPG representative took an action to provide the Commission with bundle damage statistics.
11. Asked for an update on the root cause of the rupture disc event at Point Lepreau NGS ([CMD 21-M16](#)), the NB Power representative explained that the disc had ruptured below its design pressure, and that there was no high pressure transient. NB Power is still progressing through its root cause analysis.

ACTION
by
September
2021

12. Asked about the layers of defense in place if an operator fails to trip the reactor manually, the NB Power representative explained that while there are some cases where manual transition from a running state to a shutdown state is preferred, the unit's fully automatic shutdown systems are capable of safely shutting down the reactor without manual intervention.
13. The Commission asked for clarification regarding tritium released from heavy water spilled within the Unit 1 reactor vault at the Darlington NGS. The OPG representative clarified that tritium releases to the environment had been comparable to baseline values and worker dose uptake had been within normal dose limits for the work activities.

Update on the Safety of Pressure Tubes at the Pickering NGS

14. The Commission addressed the concerns that had been raised in the media, specifically the [*Globe and Mail*](#)², regarding the safety of the pressure tubes at the Pickering NGS.
15. In reference to the pressure tube data provided for the [2018 licence renewal decision](#) for the Pickering NGS, the Commission noted for the benefit of all, that the hearing evidence had included the data that were required for the Commission to fully canvass the issue of the safety of the pressure tubes. The Commission stated that it has since been provided with no new information or evidence on which to question its conclusion that the Pickering NGS is safe to operate.

Discussion

16. The Commission asked OPG whether there was additional information or data that could call the safe operation of the Pickering NGS into question. OPG is required to report to the CNSC if it becomes aware of information that reveals abnormal degradation or weakening of pressure tubes. The OPG representative stated that there was no evidence to contradict OPG's assessment that the Pickering NGS is safe to operate.
17. With respect to the concerns raised in the *Globe and Mail* regarding inaccurate pressure tube data, the OPG representative explained that OPG did not use the data in question to determine the station's fitness for service. OPG identified that the data were non-conservative during the quality assurance review and therefore OPG did not use it in any safety-related assessment.

² M.McClean, 'Canada's nuclear regulator overlooked dubious data when renewing Pickering plant's licence, documents show', *The Globe and Mail*, March 23 2021, <https://www.theglobeandmail.com/canada/article-canadas-nuclear-regulator-overlooked-dubious-data-when-renewing/>

18. On the topic of CNSC regulatory oversight, including onsite inspections and reviews of station data, CNSC staff explained that the CNSC has direct access to OPG's information and that CNSC staff hold the authority to shut down operations if the station is not meeting regulatory requirements. CNSC staff affirmed that it never overlooks pressure tube data.
19. The Commission enquired about the 'worst-case scenario' that could result from a pressure tube failure. CNSC staff responded that pressure tube failures are part of the design basis for all CANDU reactors and that the reactors are designed to shut down safely and mitigate the consequences of such an event. The OPG representative explained that probabilistic safety assessment has shown that the risk to the public from a pressure tube failure is low.
20. Asked about the pressure tube failure at the Pickering NGS in August 1983, the OPG representative explained that the degradation mechanisms that caused that event no longer exist. The OPG representative stated that, in that event, the unit had responded as designed and shut down safely, with no impact to the public.

INFORMATION ABOUT REPORTABLE EVENTS

Canadian Light Source Inc.: COVID-19 Outbreak at Class I Facility

21. CNSC staff presented information regarding an outbreak of the COVID-19 virus at the Canadian Light Source Inc. (CLSI) facility. CNSC staff reported that, as of April 19, 2021 there were 12 employees at the facility with confirmed positive cases of COVID-19. In response, CLSI limited site access to only essential staff. As of the same day, CLSI had begun gradual return to operations coincident with the implementation of new COVID-19 safety protocols. CNSC staff verified that measures taken by CLSI are acceptable and that there is no radiological impact on workers, the public or the environment.

Discussion

22. The Commission asked CLSI about the revisions made to the facility's COVID-19 protocols. The CLSI representative described the revisions, including that workers are now provided with and required to wear medical-grade masks, and that it limits the number of people in given areas.
23. The Commission enquired about the impact of the outbreak on operations. The CLSI representative explained that a minimum of two operators are required to operate the accelerator. At the time of the outbreak and at the time of the Commission meeting, the

facility was in a scheduled maintenance outage with a further reduced minimum complement. The outbreak did not inhibit the operation of the accelerator.

24. Asked about how lessons learned from the outbreak would be shared, the CLSI representative stated that information on the outbreak was posted on both the CLSI and the Saskatchewan Health Authority websites. CNSC staff stated that it shares lessons learned with other licensees.

Preliminary Report from CNSC Staff on a Potential Exceedance of the Annual Dose Limit for a Nuclear Energy Worker at Jubilant DraxImage Inc.

25. CNSC staff provided a verbal update regarding an event at Jubilant DraxImage – a nuclear substance processing facility located in Montreal, Quebec that makes radioisotopes for medical applications – that was reported to the CNSC on April 20, 2021. CNSC staff noted that the information presented was preliminary, and that it would provide a more complete update following the licensee’s completion and CNSC staff’s review of the investigation into the event.
26. CNSC staff explained that a nuclear energy worker involved in the cleanup of a spill of iodine-131 (I-131) was later found to have received an uptake of approximately 501 kBq in the thyroid. CNSC staff noted that the worker was estimated to have received an organ equivalent dose of 590 mSv, and an effective dose of approximately 33 to 47 mSv. The annual dose limit for a nuclear energy worker is 50 mSv per year³. CNSC staff indicated that there was a potential for health effects related to the function of the thyroid, and that the worker would continue to be monitored.

Discussion

27. The Commission expressed its concern for the potential seriousness of the event and the well-being of the affected individual. Understanding that the investigation was not yet complete and that a full report would be forthcoming, the Commission asked for clarification concerning the conditions that led to the event, including the decisions that were made to clean up the spill, the use of personal protective equipment (PPE), and the subsequent monitoring of the workers.
28. A representative from Jubilant DraxImage described the event, and explained that the clean-up was done to prevent a release to the environment. The representative further stated that the exposure

³ Defined in section 13(1) of the [Radiation Protection Regulations](#).

likely occurred when the waste was moved from the spill area to a waste storage area, as the worker who performed this task was the only worker to receive an uptake of I-131, and the worker had removed their PPE during that time.

29. Regarding the monitoring of the workers, the representative from Jubilant DraxImage stated that two of the three workers involved had their thyroids tested immediately following the clean-up. The third worker, who had received the uptake, was not tested until the following day. The representative attributed this to the licensee's understanding of its licence requirement to conduct testing within 24 hours. CNSC staff stated that the requirement for testing within 24 hours is for routine monitoring as part of normal operation, and that immediate monitoring is required for non-routine situations. CNSC staff noted that licensees' radiation protection programs are required to address non-routine or upset situations. The Commission expressed concern that the licensee appeared to be confused about the appropriate response to the spill, and suggested that timely testing and intervention could have mitigated the event. This being a preliminary report, such that factual conclusions could not be reached at this time, the Commission expects this to be addressed following the completion of the investigation. CNSC staff concurred and noted that it would continue to follow up with the licensee and take appropriate action.

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INFORMATION ITEMS

Update on the Nuclear Waste Management Organization's Adaptive Phased Management

30. With reference to [CMD 21-M17.1](#) and [CMD 21-M17.1A](#), the Nuclear Waste Management Organization (NWMO) presented an update on the progress of the Adaptive Phased Management (APM)⁴ project. The NWMO provided an overview of activities carried out since last presenting to the Commission in [November 2017 \(CMD 17-M50.1\)](#). The NWMO reported that it was on track to make the site selection decision in 2023, and highlighted the following key areas:
- Design advancements – namely the deep geological repository (DGR) concept and engineered barrier system, the surface facilities, and the safety assessment;
 - Reconciliation policy – namely an assessment tool to look at corporate policies and incorporating indigenous knowledge;

⁴ GoC. 2007a. Government Approval of APM, Order-in-Council, Part 11, Vol. 141, No. 13 of the Canada Gazette, SI/TR/2007-63.

- Initiating partnership and transportation dialogues – namely selecting a willing community as part of the site selection process and the draft transportation framework;
 - Beginning field investigations – namely seismic surveys, groundwater well networks, and bore hole drilling; and
 - Actions to adapt to the COVID-19 pandemic – namely work from home, delaying field activities into 2021, and supporting employee morale and mental health.
31. With reference to [CMD 21-M17](#), CNSC staff presented an update on the CNSC’s early role in the NWMO’s APM project. CNSC staff highlighted activities conducted since last presenting to the Commission in [November 2017](#) (CMD 17-M50). CNSC staff provided information on the following items:
- Community outreach and indigenous engagement – namely building strong relationships based on trust and mutual respect early in the pre-licensing phase;
 - Building scientific and technical capacity – namely participation in international working groups, keeping up to date on DGR programs, and research that includes natural analogs;
 - Readiness to regulate the APM project – namely the regulatory framework for waste management; and
 - Early engagement with the NWMO – namely the special project service agreement and technical reviews based on [REGDOC 3.5.4](#)⁵.
32. The Commission expressed the view that both the NWMO and CNSC staff, in their respective presentations, clearly demonstrated that the ongoing process is robust, thorough, inclusive, and collaborative.

Discussion

Indigenous and Community Engagement

33. The Commission requested further details on the indigenous consultation and community engagement process, including triggers, methodology, and longevity. CNSC staff stated that early engagement had already begun to familiarize communities with the regulatory process. CNSC staff explained that the formal impact assessment process, including the early consultation process, would begin once the NWMO submits its application to the CNSC and the Impact Assessment Agency of Canada (IAAC).

⁵ REGDOC-3.5.4, *Pre-Licensing Review of a Vendor’s Reactor Design*

34. The NWMO representative explained that the NWMO continues to welcome diverse viewpoints and that it is looking for a compelling demonstration of willingness from the host community. The NWMO representative expressed the importance of sustained engagement throughout the project, including with young people who would become involved in the decades to come. The NWMO representative also described the NWMO's public attitude research. This research includes polling on various topics and becomes progressively more comprehensive as the siting process nears completion. The Commission requested that results of this polling be included in the next update by the NWMO, after site selection.

ACTION

by
Summer
2023

Site Selection and Design

35. The Commission enquired about the site selection process, the conceptual DGR design, and the relationship between the two. The NWMO representative described the detailed technical characterization that was underway, which would ensure the chosen site is able to meet the safety case. The NWMO representative also outlined the steps remaining in the site selection process. The NWMO representative clarified that after the site selection, the next step would be applying for a licence to prepare site.
36. With respect to design, the NWMO representative stated that expandability, including alternate fuel types, was one of the NWMO's criteria and that it was assessing this at both possible siting areas. The NWMO representative noted that the conceptual design would evolve based on innovations, such as the engineered barrier system. The NWMO representative explained that the NWMO had begun incorporating a site-specific perspective into the conceptual design and was using this to support the site selection process.
37. The NWMO provided further details on its research and development activities. The NWMO representative stated that the focus of the research was to improve the NWMO's understanding and confidence in safety and material expectations. The NWMO representative explained that the NWMO was collaborating with international colleagues, including utilizing underground research facilities. The NWMO representative also detailed the NWMO's interactions with the Nuclear Energy Agency and International Atomic Energy Agency initiatives related to institutional controls and preservation of records.

Partner Organizations

38. The Commission provided an opportunity for the other organizations in attendance to provide comments on the NWMO's APM project. The Independent Advisory Group's (IAG) representative explained that the IAG's mandate is to oversee the research activities at the NWMO and the CNSC with respect to the DGR. The IAG representative described the research as leading edge and concurred with the presentations of the NWMO and the CNSC.
39. A representative from Natural Resources Canada (NRCan) provided information on NRCan's role in oversight with respect to the [Nuclear Fuel Waste Act](#). The NRCan representative stated that the Minister of Natural Resources provides a statement on the NWMO's progress following each of NWMO's annual reports. The NRCan representative also provided information relating to NRCan's waste policy modernization review, which had been launched on November 16, 2020. The NRCan representative expressed that NRCan would prepare a report on its engagement activities and that it was targeting late summer or early fall 2021 for further public comment on a draft policy. The NRCan representative reported that this policy review would not impact the NWMO project.
40. With respect to the readiness for an impact assessment, a representative from IAAC expressed that the IAAC recognized the value in participating in the pre-planning process for the NWMO's APM project. The IAAC representative stated that the IAAC did not yet have any information on the transportation elements of the APM project, but would be looking for the NWMO to include it in the initial project description, as part of the initiation of the impact assessment.

Pilot Approach for Periodic Environmental Protection Review Reports

41. With reference to [CMD 21-M18](#), CNSC staff presented an update on its proposed Pilot Approach for Periodic Environmental Protection Review (EPR) Reports. CNSC staff currently develops EPR reports and appends them to CMDs for licensing proceedings. Under the proposed approach, the CNSC would publish EPR reports for existing facilities separately and in advance of CMDs. CNSC staff explained that this approach aims to build trust with the public and Indigenous groups, and provides transparency on CNSC staff's assessment of a licensee's environmental protection

measures. The pilot for this approach is the upcoming Commission hearing regarding the licence renewal application from Cameco Corporation for its Blind River Refinery facility, scheduled for November 2021. CNSC staff published the [EPR report in April 2021](#), rather than in a CMD that will not be available until August 2021. CNSC staff noted that feedback from the pilot project would be implemented in future EPR reports.

Discussion

42. The Commission sought clarification about the update frequency for the EPR reports, as well as the availability of environmental data for the public. CNSC staff explained that the reports would be updated at least every five years, in conjunction with licensees' updated environmental risk assessments. CNSC staff highlighted a number of ways that environmental data on licensee activities are made available to the public, including the federal Open Government platform, the CNSC's independent environmental monitoring program, and through annual reporting. The Commission expressed its interest in having CNSC staff provide an update on the Open Government platform once sufficient CNSC and licensee data are available.
43. The Commission enquired about how CNSC staff would ensure that up-to-date information is made available to the public in the event that there is a long interval between an EPR and a CMD. CNSC staff acknowledged that longer gaps could arise, and stated that CMDs would include the most up-to-date information possible. CNSC staff expressed the view that the benefit of providing more information to interested parties earlier in the process outweighed the potential downside of not having the most recent data. CNSC staff intend to improve the process based on feedback and experience gained from the pilot.
44. Asked if CNSC staff had identified any additional challenges with the proposed approach, CNSC staff stated that the main challenge would be to update and publish the EPR for each facility.
45. The Commission supports the pilot approach and looks forward to the results. The Commission notes that, should the pilot be successful, CNSC staff should identify other areas where a similar approach could be used.

ACTION
by
March 2022

Closure of the Public Meeting

46. The meeting closed at 3:24 p.m.

McMillan
Megan



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Recording Secretary

2021-06-21

Date

MacDonald
Daniel



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Recording Secretary

2021-06-21

Date

Young
Michael



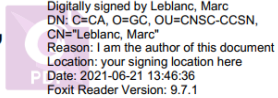
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Recording Secretary

2021-06-21

Date

Leblanc,
Marc



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Secretary

2021-06-21

Date

APPENDIX A

CMD	Date	e-Docs No.
21-M12	2021-03-17	6515480
Notice of Commission Meeting to be held on April 27, 2021		
21-M13	2021-04-19	6472889
Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held remotely on April 27, 2021		
21-M14	2021-04-13	6576741
Draft Minutes of the Commission Meeting of December 8-9-10, 2020		
21-M15	2021-03-24	6576777
Draft Minutes of the Commission Meeting of January 21, 2021		
21-M16	2021-04-21	6543750
Status Report Status Report on Power Reactors Submission from CNSC Staff		
21-M17	2021-04-20	6540360
Information Item Information Update on CNSC's Early Role in NWMO's Adaptive Phased Management Presentation from CNSC Staff		
21-M17.1	2021-04-07	6532605
Information Item Implementation of Adaptive Phased Management Written submission from the Nuclear Waste Management Organization		
21-M17.1A	2021-04-20	6542924
Information Item Implementation of Adaptive Phased Management Presentation from the Nuclear Waste Management Organization		
21-M18	2021-04-20	6542348
Information Item Pilot Approach for Periodic Environmental Protection Review Reports Presentation from CNSC Staff		