Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on April 12, 2017

Canada

April 12, 2017

Minutes of the Canadian Nuclear Safety Commission (CNSC) meeting held Wednesday, April 12, 2017 beginning at 9:35 at the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, ON.

Present:

M. Binder, President
Dr. S. McEwan
Dr. S. A. Soliman
Dr. S. Demeter

M. Leblanc, Secretary
L. Thiele, Senior General Counsel
M. Hornof, Recording Secretary

CNSC staff advisors were: G. Frappier, H. Tadros, J. LeClair, C. Moses and P. Fundarek

Other contributors were:

- NB Power: J. Nouwens
- OPG: Z. Khansaheb and F. Grant
- Bruce Power: F. Saunders
- CNL: D. Cox and N. Mantifel
- Vancouver Coastal Health Authority: M. Gonzalez and K. Enns

Constitution

1. With the notice of meeting CMD 17-M16 having been properly given and a quorum of Commission members being present, the meeting was declared to be properly constituted.

2. All permanent Commission Members participated in the decision made on meeting item CMD 17-M20, *Regulations Amending Certain Regulations Made Under the Nuclear Safety and Control Act*. Although Commission Member Seeley was not present in Ottawa during the deliberation on this meeting item, Mr. Seeley was provided with and reviewed all of this documentation pertaining to this matter, in recognition of subsection 22(3) of the *Nuclear Safety and Control Act* (NSCA).[1] He participated in this decision via telephone and e-mail.

3. Since the meeting of the Commission held March 8, 2017, Commission member documents CMD 17-M16 to CMD 17-M22 were distributed to members. These documents are further detailed in Annex A of these minutes.

[1] Statues of Canada 1997, Chapter 9.

Adoption of the Agenda

4. The revised agenda, CMD 17-M17.A, was adopted as presented.

Chair and Secretary

5. The President chaired the meeting of the Commission, assisted by M. Leblanc, Secretary, and M. Hornof, Recording Secretary.

Minutes of the CNSC Meeting Held March 8, 2017

6. Commission Members R. Velshi and D. Tolgyesi, who were present at the March 8, 2017 meeting for the discussion on CMD 17-M12, approved the section of the minutes on that matter prior to this meeting.

7. The Commission Members approved the minutes of the March 8, 2017 Commission meeting as presented in CMD 17-M18 with changes to three paragraphs, as noted below:

   - Paragraph 40 will be changed to reflect that the Commission believes in scientific evidence and rigour; notes the rigour of the evidence that was presented by CNSC staff, industry and third-party experts; and regards the balance of evidence presented as supporting that no further action on this matter is required.
   - Paragraph 43 will be changed to reflect that CNSC staff's risk-informed decision-making process for the CANDU Safety Issues was endorsed by the international community at the 5th Review Meeting for the Convention on Nuclear Safety in 2011.
   - The last sentence of paragraph 76 will be changed to read that "The Commission recommended that the outcomes of this research should be more publicly available as appropriate."

STATUS REPORTS

Status Report on Power Reactors

8. With reference to CMD 17-M19, which includes the Status Report on Power Reactors, CNSC staff presented the following update:

   - the Point Lepreau Nuclear Generating Station (NGS) started a planned maintenance outage on April 7, 2017. The reactor was placed in a guaranteed shutdown state for this outage with a scheduled completion date of April 29, 2017;

Pickering NGS

9. In regard to the leak in the Pickering NGS Unit 5 moderator room first reported at the March 8, 2017 Commission meeting, the Commission expressed disappointment that a more comprehensive update on this event had not been provided. An Ontario Power Generation (OPG) representative provided the Commission with additional information on this outage, explaining that OPG had identified some areas in the moderator room with sealant deterioration that may have contributed to the leak. The OPG representative also stated that OPG was repeating tests to confirm the exact source of the leak and that full results would be available soon. CNSC staff stated to the Commission's satisfaction that a more comprehensive update would be provided to the Commission after OPG submitted its final report to CNSC staff.

10. The Commission enquired about whether the leak in the Pickering NGS Unit 5 moderator room could be related to the leak before break concept. CNSC staff explained that the leak before break concept was applied to components in the safety significant primary heat transport system, and that the moderator room was not related to this system. As such, the leak before break concept would not be applied to the equipment involved in this event. The Commission was satisfied with the information provided on this matter.

Darlington NGS

11. The Commission requested confirmation that the two incidents that occurred in the Darlington Learning Centre were not related to any environmental issues at that location. The OPG representative confirmed that both medical emergencies resulted from pre-existing medical conditions and that no environmental concerns existed in the Darlington Learning Centre.

Presentation by Bruce Power – Worker Injured at Bruce B

12. With reference to CMD 17-M19.1, a Bruce Power representative provided detailed information in regard to the March 26, 2017 electrical accident at Bruce B Unit 5 when a worker made contact with a live portion of a 13.8 kV circuit breaker during post-maintenance testing and was hospitalized for 48 hours. The Bruce Power representative also stated that the CNSC and the Ontario Ministry of Labour had been notified of the accident and that the root cause of the event was being thoroughly investigated.

13. The Commission enquired about the injured worker's qualifications and employment status. The Bruce Power representative responded that the worker was a fully-qualified electrician who was hired as a contractor to augment Bruce Power's regular maintenance crews during the outage and was supervised by Bruce Power employees at all times.

14. Asked to provide information about the worker's current condition and eventual return to work, the Bruce Power representative stated that the worker did not sustain serious permanent injuries and that, since the worker was a contractor, the return-to-work process was being handled through the Ontario Workplace Safety and Insurance Board.

15. The Commission requested additional details about how the worker came to touch a live contact. The Bruce Power representative provided additional details on the accident, noting that this was one of the major focuses of the root cause analysis of this event and that Bruce Power was committed to ensuring continued vigilance with respect to hazards in the workplace.

16. The Commission expressed its appreciation for the photographs and the video provided by Bruce Power during its presentation. The Commission expects an update on this matter when the root cause analysis on this event has been completed by Bruce Power. **ACTION** by August 2017

Canadian Nuclear Laboratories Limited: Status on Fitness for Service for the Chalk River Laboratories

17. With reference to CMD 17-M21, CNSC staff presented the seventh Status Report on Fitness for Service for Chalk River Laboratories (CRL). CNSC staff submitted that, since the last update to the Commission at the January 26, 2017 meeting, Canadian Nuclear Laboratories (CNL) had achieved a "satisfactory" rating in the remaining elements of the Equipment Fitness for Service specific area and that, with the completion of those activities, CNL had achieved an overall performance rating of "satisfactory" in the Fitness for Service Safety and Control Area (SCA) at CRL.

18. With reference to CMD 17-M21.1, a CNL representative presented the Commission with detailed information on the work that was carried out to achieve the satisfactory rating in the Fitness for Service SCA at CRL. CNL also provided the Commission with an update on its systematic equipment reliability programs for the National Research Universal (NRU) reactor and the reliability outlook until the reactor's planned end of operation on March 31, 2018.

19. Asked about the sustainability of the 565-hour mean time between trips and unplanned shutdowns, a CNL representative responded that, based on observed trends, CNL expected equipment reliability and, therefore, this mean time, to continue increasing.

20. With the upcoming end of operation of the NRU reactor, the Commission enquired about whether improvements to the reactor could have been made sooner. A CNL representative explained the relationship between the Integrated Safety Review (ISR) that was carried out in support of CNL's 2011 licence renewal application and the improvements to the NRU reactor that were made as a result of the ISR. The CNL representative also explained that some of the improvements were only recently completed because they were long-term projects and that, regardless of the reactor shutdown date, CNL's primary objective was to meet all safety requirements and to continually improve the NRU reactor's reliability.

21. The Commission further enquired about the mechanism by which the NRU reactor fitness for service issues would have been identified had the ISR not been completed. The CNL representative explained that multiple safety reviews had been conducted for the NRU reactor prior to the ISR and that these had resulted in seven major upgrades which improved the overall safety of the reactor. CNSC staff confirmed the information provided by CNL and provided additional information about the CNSC's Compliance Verification Program and how CNSC staff determined that an ISR was required for the NRU reactor.

22. Asked about the NRU reactor rod monitoring system and its correlation to system reliability, the CNL representative explained that the system monitored the flow, pressure and temperature of each fuel rod and that the rod monitoring system did not contribute significantly to forced shutdowns and reactor trips.

23. The Commission noted that the preventive maintenance backlog was often a good indicator of a facility's management and, noting the greatly reduced maintenance backlog at CRL and the achievement of a satisfactory rating in this specific area, enquired about the prioritization of these maintenance activities. CNSC staff explained that overdue maintenance activities were prioritized by safety significance and stated that CNSC staff confirmed that the remaining preventive maintenance activities were not related to any safety-significant systems.

24. With the upcoming end of operation of the NRU reactor, the Commission asked about plans to salvage the new equipment that was used to upgrade the NRU reactor. The CNL representative

responded that CNL would look at the possibility to salvage and reuse the NRU reactor equipment and provided information about the plans that exist in this regard.

25. The Commission expressed its satisfaction that CNL had achieved a satisfactory rating in the Fitness for Service SCA and commended CNL on the efforts put forth for this achievement, as well as CNSC staff for its regulatory oversight of these activities. Based on the information presented, the Commission is satisfied that CNL has met all the requirements in order to achieve a satisfactory rating in the Fitness for Service SCA and that no further specific updating on the status on Fitness for Service for CRL is required. **DECISION**

Event Initial Report (EIR)

26. With reference to CMD 17-M22, CNSC staff presented information about the March 1, 2017 exceedance of a regulatory dose limit by a nuclear energy worker during a therapeutic nuclear medicine procedure using iodine-131 (I-131) at the Vancouver General Hospital. The licensee, the Vancouver Coastal Health Authority (VCHA), notified CNSC staff of the overexposure on March 3, 2017 when the worker became aware of the contamination. CNSC staff stated that this was the second EIR within five months for this licensee, with the first EIR having been presented at the December 2016 Commission meeting.[2] CNSC staff provided the Commission with detailed information about the event and the corrective actions taken by the VCHA, noting that a full event report was provided to CNSC staff on March 24, 2017. CNSC staff reviewed and confirmed the dose estimate to the worker, which was calculated to be 114 mSv to the left hand and 2,327 mSv to the right hand, and noted that this dose was significantly higher than the regulatory limit for extremities of 500 mSv; however, an assessment of the worker by a nuclear medicine physician identified no effects resulting from the exposure. CNSC staff further submitted that a Type 1 inspection of the VCHA would be conducted in early 2018 and confirmed to the Commission's satisfaction that CNSC staff would continue to monitor the licensee's corrective actions to ensure the prevention of similar events.

27. The Commission expressed concerns about the effectiveness of the governance of radiation safety within the VCHA. In response, the VCHA representative provided detailed information about the VCHA radiation safety organizational structure and the membership of its Regional Radiation Safety Committee, noting

[2] CMD 16-M72, Event Initial Report, Vancouver Coastal Health Authority, *Exceedance of a regulatory dose limit by a nuclear energy worker during a therapeutic nuclear medicine procedure*, December 2016.

that all of the sites managed by the VCHA had their own site Radiation Safety Officer (RSO).

28. Asked if the CNSC Regulatory Guide G-121, *Radiation Safety in Educational, Medical and Research Institutions*, was still the guidance used by medical institutions when establishing their radiation safety programs, CNSC staff confirmed that, in addition to several other Regulatory Guides, G-121 was the current guidance used by these licensees. CNSC staff further explained that it was planned to incorporate these guidance documents in a single, comprehensive REGDOC.

29. Based on the information provided, the Commission expressed further concerns that large, regionalized health authorities may not have appropriate guidance in establishing radiation safety organizational structure, noting that two failures of radiation safety processes within several months at VCHA-managed facilities indicated that the current system was not adequate. CNSC staff provided detailed information about its oversight of similar licensees and about an evaluation that CNSC staff had launched to study the overall effectiveness of the regulation of the RSO function and the structures that are needed to support that function. CNSC staff further stated that the progress of this evaluation would be provided to the Commission during the September 2017 presentation of the *Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2016.*

30. The Commission enquired about why the licensee would not be inspected by the CNSC earlier than early 2018. CNSC staff explained that the timing of the Type 1 inspection would allow sufficient time to assess whether the implementation of the proposed corrective actions are adequate and provided details on the increased regulatory oversight that would be conducted for this licensee. Based on the results of the CNSC's monitoring and oversight activities, CNSC staff stated that they would consider carrying out the inspection sooner, if required. The VCHA representative provided additional information about corrective actions that had already been implemented at all VCHA-managed facilities. The Commission was satisfied with the information provided in this regard.

31. The Commission asked about historic extremity dose trends at VCHA-managed facilities. The VCHA representative stated that the annual doses to extremities at these facilities were 70 to 80 mSv per year.

32. The Commission also asked about whether thyroid monitoring was conducted on the affected worker. The VCHA representative

responded that thyroid monitoring conducted on the worker showed a 0.73 kBq uptake of I-131, which was below the 1 kBq threshold. The VCHA also stated that since no other persons were found to be contaminated, no other workers or family members were monitored for I-131 uptake.

33. The Commission notes that, through its mandate, the CNSC has a responsibility to ensure the effectiveness of radiation safety programs at CNSC-licensed facilities. In this regard, the Commission directed CNSC staff to investigate and propose regulatory requirements, as appropriate, for radiation safety that would ensure that healthy radiation safety cultures are implemented at all facilities managed by similar licensees. **ACTION** by October 2017

DECISION ITEM - REGULATIONS

Since CMD 17-M20 contains Cabinet Confidence materials, the following matter was considered in closed session.

Regulations Amending Certain Regulations Made Under the Nuclear Safety and Control Act

34. With reference to CMD 17-M20, CNSC staff recommended to the Commission to amend certain regulations made under the NSCA.

35. Following its deliberation on the matter, the Commission decided, pursuant to subsection 44(1) of the NSCA, to make the *Regulations Amending Certain Regulations Under the Nuclear Safety and Control Act*. **DECISION**

36. The Commission expects CNSC staff to produce clear and comprehensive guidance documents to accompany these regulations to ensure their intended application and accurate interpretation during operational use. Further, the Commission anticipates that any such explanatory text will be included in a future CNSC REGDOC.

Closure of the Public Meeting

37. The public portion of the meeting closed at 11:10.

Recording Secretary — Date: May 18, 2017

Secretary — Date: 18/07/2017

APPENDIX A

17-M16	2017-03-28	e-Docs 5217478
Notice of Commission Meeting of April 12, 2017		
17-M17	2017-03-29	e-Docs 5217496
Agenda of the meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on Wednesday, April 12, 2017 in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario		
17-M17.A	2017-04-10	e-Docs 5227061
Revised Agenda of the meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on Wednesday, April 12, 2017 in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario		
17-M18	2017-04-10	e-Docs 5227143
Approval of Minutes of Commission Meeting held on March 8, 2017		
17-M19	2017-04-07	e-Docs 5226217
Status Report on Power Reactors Submission from CNSC Staff		
17-M19.1	2017-04-10	e-Docs 5226968
Status Report on Power Reactors Presentation from Bruce Power on the worker injured at Bruce-B Nuclear Generating Station		
17-M21	2017-04-10	e-Docs 5226454
Status Report on Fitness for Service for the Chalk River Laboratories Submission from CNSC Staff		
17-M21.1	2017-04-07	e-Docs 5226461
Status Report on Fitness for Service for the Chalk River Laboratories Presentation from the Canadian Nuclear Laboratories		
17-M22	2017-03-29	e-Docs 5219004
Event Initial Report – Vancouver Coastal Health Authority Exceedance of a regulatory dose limit by a nuclear energy worker during a therapeutic nuclear medicine procedure Submission from CNSC Staff		
17-M20	2017-03-27	Protected B
Decision Item on a Regulatory Document: Regulations amending certain regulations made under the *Nuclear Safety and Control Act* Submission from CNSC Staff [This document contains classified information and is not publicly available]		