

Canadian Nuclear
Safety Commission



Commission canadienne
de sûreté nucléaire

Minutes of the Canadian Nuclear Safety
Commission (CNSC) Meeting held
on June 17 and 18, 2015

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held Wednesday, June 17 (beginning at 2:00 pm) and Thursday, June 18, 2015 in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario.

Present:

M. Binder, President
A. Harvey
D.D. Tolgyesi
R. Velshi
S. McEwan

K. McGee, Assistant Secretary
L. Thiele, Senior General Counsel
M. Young, Recording Secretary

CNSC staff advisors were: R. Jammal, B. Howden, B. Poulet, F. Rinfret, P. Thompson, C. Ducros, D. Newland, K. Glenn, H. D'Arcy, A. Régimbald, K. Murthy, A. Alwani, H. Rabski, K. Mayer, S. Draper, L. Makin, S. Oue, J. Jin, R. Garg, A. McAllister, Y. Poirier, L. Sigouin, C. Carrier, P. Tanguay, B. Torrie, L. Forrest and C. Moses

Other contributors were:

- Ontario Power Generation: L. Swami, V. Bevacqua, L. Morton, R. McCalla and B. Duncan
- Bruce Power: M. Burton
- New Brunswick Power Nuclear: J. Nouwens
- Ontario Ministry of the Environment and Climate Change: M. Doggett, H. Kew and K. Faaren
- Montreal Neurological Institute: S. Baillet, J.P. Soucy and G. Massarweh
- Centre hospitalier universitaire de Québec: A. Garon, R. Ouellet and J. Morrier
- McMaster University: C. Heysel

Constitution

1. With the notice of meeting CMD 15-M17 having been properly given and all permanent Members of the Commission being present, the meeting was declared to be properly constituted.
2. Since the meeting of the Commission held March 25 and 26, 2015, Commission Member Documents CMD 15-M18 to CMD 15-M26 were distributed to Members. These documents are further detailed in Annex A of these minutes.

Adoption of the Agenda

3. The revised agenda, CMD 15-M18.A, was adopted as presented.

Chair and Secretary

4. The President chaired the meeting of the Commission, assisted by K. McGee, Assistant Secretary and M. Young, Recording Secretary.

Minutes of the CNSC Meeting Held March 25 and 26, 2015

5. The Commission Members approved the minutes of the March 25 and 26, 2015 Commission Meeting as presented in CMD 15-M19, with the following change. Referring to paragraph 46, the Commission sought confirmation that the Global Assessment Report would be made available to the public once completed. CNSC staff responded that both the Global Assessment Report and the Integrated Implementation Plan would be publicly available. The Commission notes that a footnote was added to the March 25 and 26, 2015 minutes to reflect this confirmation.

STATUS REPORTS

Status Report on Power Reactors

6. With reference to CMD 15-M20, which includes the Status Report on Power Reactors, CNSC staff presented updates on the following:
 - Ontario Power Generation (OPG) had notified Fisheries and Oceans Canada (DFO) of the fish impingement incident at the Pickering Nuclear Generating Station (NGS), referred to in the CMD.
7. The Commission asked for more information concerning the unavailability of reheaters at the Point Lepreau NGS. CNSC staff described the location and function of the reheaters, which minimize moisture in low-pressure turbines, and explained that abnormal conditions resulted in New Brunswick Power (NB Power) shutting down the Point Lepreau NGS to remove the affected components from service. CNSC staff noted that the NGS would operate between 75 and 85 percent of full power until the affected components have been repaired, and that there were no safety concerns associated with the operation of the NGS under these conditions. NB Power stated that it would replace the affected components during the next scheduled maintenance outage.
8. The Commission sought additional information regarding the update on suspect material used to manufacture valves. A representative from Bruce Power explained that an equipment supplier had falsified documents regarding the qualification of the steel used to manufacture the valves, which required that the

- affected valves be quarantined and that their qualifications be verified to ensure that they meet Canadian standards. The Bruce Power representative noted that OPG, Bruce Power and NB Power were working together to address the issue, and confirmed that safe operation of the facilities has not been affected by this event. The Bruce Power representative stated that they would no longer use the supplier in question.
9. The Commission asked for more information concerning the fish loss event at the Pickering NGS, which occurred because a net that prevents fish from entering the NGS cooling water intake was not fully installed. A representative from OPG responded that the loss of fish from the event was approximately 8000 kg, compared to a normal annual loss of 4000 kg. The OPG representative noted that a similar event had occurred in the past, due to the net not being secured, and stated that OPG would take measures to ensure that the net remains in place to prevent further events. CNSC staff stated that it would continue to monitor the situation and provide updates to the Commission. CNSC staff noted that DFO had been notified of the event, as required, and stated that discussions between CNSC staff and DFO were ongoing regarding potential future measures under the *Fisheries Act*.¹

Event Initial Reports (EIR)

OPG – Darlington NGS: Heavy Water Leak during Maintenance on April 14, 2015

10. With reference to CMD 15-M21, CNSC staff presented information regarding a heavy water leak during maintenance at the Darlington NGS. CNSC staff noted that it had recently received, but not yet reviewed, a detailed report on the event from OPG. A representative from OPG explained that the event had occurred because workers had inadvertently bumped a valve, which subsequently opened, during maintenance work on a separate component. The OPG representative described the measures that OPG would take to prevent recurrence of similar events, including improved training and work practices, and physical protection for the valve. The OPG representative noted that the event would serve as operating experience for the nuclear industry.
11. The Commission, noting that CNSC staff had included a photograph of and flow diagram for the valve in question in its CMD, asked for more information concerning the event. CNSC staff described the components illustrated in the images and explained that the proximity of one component to another in a

¹ R.S.C., 1985, c. F-14

- limited space is what had led to the inadvertent opening of the valve. CNSC staff noted that the workers were wearing protective equipment, which could have led to reduced visibility and spatial awareness. The representative from OPG noted that the volume of the leak, 7,000 litres, was a result of the leak not being immediately noticed and the time required for precautions to be taken before workers could access and manage the leak.
12. The Commission asked why the valve had been inadvertently opened. A representative from OPG explained that, unlike some other valves, the valve was not required to be locked into position, but tagged and identified. The OPG representative noted that the valve was not difficult to open, which is why it opened when it was contacted by the worker. The Commission suggested that the valves should be locked to prevent recurrence. The OPG representative agreed that the valve would need to be guarded or locked, and noted that OPG would also look to applying similar precautions to other valves in the NGS.
13. The Commission asked for more information concerning the environmental consequences of the event. CNSC staff responded that the consequences were negligible due to the leak being mostly confined within the station, and noted that the release was below one percent of regulatory release limits. The representative from OPG concurred, noting that the majority of the leak was contained in the confinement system of the NGS, which minimizes releases. OPG estimated the release to be 0.104 microsieverts (μSv), which is well below the regulatory limit of 1000 μSv or one millisievert (1 mSv) per year.
14. OPG noted that it would be reviewing historical operating experience to determine if relevant past experience had been overlooked. The Commission expressed its interest to hear back from OPG regarding this review.

ACTION
by
December
2015

Ontario Ministry of the Environment and Climate Change: Unplanned release of non-radioactive construction waste water at the decommissioned Deloro Mine Site

15. With reference to CMD 15-M26, CNSC staff presented information regarding an unplanned release of non-radioactive construction wastewater at the decommissioned Deloro Mine Site, near the Village of Deloro, Ontario. The Ontario Ministry of the Environment and Climate Change (OMECC), as the licensee, also presented information to the Commission. CNSC staff stated that unplanned releases into Young's Creek had occurred from April 29, 2015 to May 5, 2015 due to the collapse of an aqua barrier in the creek and during the construction of a new barrier. CNSC staff noted that a series of control measures had been put in place, and

stated that no environmental impact was likely to result from the release. However, CNSC staff identified that a CNSC Designated Officer order was issued to the OMECC on June 3, 2015, following a CNSC inspection.² CNSC staff further noted that an update would be presented to the Commission in December 2015. The OMECC presented a description of the Deloro Mine Site and the cleanup activities it had undertaken, including those for Young's Creek, stated that it had notified the local community of the release, and noted that information had been posted to the CNSC website.

ACTION
by
December
2015

16. The Commission asked for clarification regarding the cleanup of the spills. A representative from the OMECC described the various zones that had been established through the installation of aqua barriers and rock barriers, and explained that the cleanup would take place in a "zone-by-zone" manner, where areas contained by the barriers would be cleaned through the removal of contaminated sediment.
17. The Commission asked for more information concerning the distribution of radiation on the Deloro Mine Site. A representative from the OMECC explained that there was low-level radioactive waste within the three major clean-up areas of the Deloro Mine Site, but noted that much had been removed. The OMECC stated that there were no elevated levels of radioactivity in the area of Young's Creek from where the release had occurred. CNSC staff noted that the former tailings area of the mine site was a dry area, not a tailings pond, and reiterated that the unplanned releases were not from an area with radioactive contamination.
18. The Commission asked why the CNSC Designated Officer had decided to issue an order to the OMECC. CNSC staff responded that the order was based on the lack of onsite contingencies to prevent further releases. A representative from the OMECC noted that the OMECC was reviewing site conditions to ensure that appropriate measures are in place.
19. The Commission enquired about the CNSC's regulatory oversight at the site. CNSC staff responded that it conducts annual inspections, and noted that it had raised concerns about the ability for the aqua barriers to function over the winter and retain the sediment during the spring. CNSC staff noted that the aqua barriers were not intended to be used over the winter but a delay in the

² The Commission notes that the purpose of this meeting item was for information purposes and not to review the Designated Officer order (Order). The procedure for a designated officer order is described in the *Nuclear Safety and Control Act* (S.C. 1997, c. 9). Any order made under the Act is referred to the Commission for review to confirm, amend, revoke or replace the order. In a letter dated June 19, 2015, the Deputy Minister of the OMECC submitted that the OMECC would not be seeking an opportunity to be heard on the Order. On June 20, 2015, the Commission confirmed the Order.

- work schedule resulted in that being the case. CNSC staff commented that the Young's Creek area is a large flood plain, with water volumes changing from year to year.
20. The Commission noted that, following the Mount Polley mine tailings dam breach in British Columbia, the CNSC had taken regulatory action to licensees with tailings facilities and asked if the Deloro Mine Site had been part of that request for action. CNSC staff noted that the Deloro Mine Site was a different situation because the site does not have a tailings pond and the aqua barriers were temporary structures, not a dam. The Commission did not accept the distinction, noting that, regardless, the barriers were in place to prevent releases of contaminants.
 21. The Commission asked for more information about OMECC's plans to control and clean up the spill in the event of heavy rainfall. The OMECC representative responded that the OMECC has a number of stormwater control measures in place but noted that they would be reviewed to ensure that they can better manage intense rainfalls to prevent soil from entering the creek. The OMECC representative noted that the water depth in Young's Creek was not high, and that the highway that runs over Young's Creek was not at risk of being flooded. The OMECC representative reiterated the commitment to control the contaminated sediment on the site and protect the health and safety of persons and the environment.
 22. The Commission noted that some barriers had been removed and asked how this would have affected the water quality downstream. The representative from OMECC explained that some barriers were removed to allow the natural flow of the creek to occur during the spring. The OMECC representative noted that the water quality was monitored to ensure that it was not contaminated. CNSC staff stated that the CNSC, along with Environment Canada, were reviewing the water quality monitoring results, and noted that any further regulatory action would be taken, if needed.
 23. The Commission asked about the public availability of the information regarding the events, noting that a letter to local residents had also been posted on the CNSC website.³ The representative from the OMECC responded that, in addition to the letter, there was a local public liaison committee, and that the OMECC would be having a public meeting to discuss the letter. The OMECC noted that no concerns had been raised in response to the letter.
 24. The Commission enquired about the long-term plans for regulatory oversight of the site. The OMECC representative responded that

³ The June 11, 2015 *Update on the Deloro Mine Site Cleanup Project* from the Ministry of the Environment and Climate Change, a public document, was not provided in the CMD for this meeting item but was added to the Commission's record during the meeting.

the OMECC would continue to work with the CNSC until such time that the OMECC can take control of the site without any CNSC oversight. CNSC staff commented that the CNSC would be working with the Government of Ontario to establish the way forward for the long-term oversight of the site.

Verbal Updates

Montreal Neurological Institute

25. CNSC staff presented verbal updates on two matters. The first was in regards to an event that occurred on January 12, 2015 at the Montreal Neurological Institute (MNI) where a nuclear energy worker, processing Fluorine-18 in a hot cell, handled a large quantity of this radioisotope without shielding, and as a result was exposed to relatively high dose rates. CNSC staff described the event and the subsequent investigation. CNSC staff reported that the worker in question, who had attempted to cover up the initial event, was not wearing his dosimeter at the time of the event. As a result, the worker attempted to recreate the conditions of the event in order to obtain a similar dose on his dosimeter. Although the worker's dosimeter indicated a dose of 106 mSv, CNSC staff stated that the estimated whole body dose likely received by the worker was approximately 15 mSv, which is below the CNSC annual regulatory limit of 50 mSv for a nuclear energy worker. The dose to the worker's left hand was conservatively estimated by CNSC staff to be approximately 1.7 Sv, which is above the annual regulatory limit of 500 mSv for the hands, but below the thresholds for deterministic effects.
26. CNSC staff determined that the event resulted from the fact that the worker did not follow procedures established under the CNSC licence issued to the MNI to deal with unplanned situations of this nature, combined with other deficiencies identified in the implementation of the radiation safety program at the MNI. CNSC staff stated that it conducted an inspection at the MNI on February 18-20, 2015. As a result of this inspection, CNSC inspector issued an order to the MNI on February 23, 2015 requiring the MNI to cease isotope production until the MNI remedied the staffing levels and implemented improved contamination control measures. CNSC staff reported that the MNI complied with the order on March 2, 2015, and that the MNI had or would be completing the required corrective actions identified by CNSC staff during the inspection. CNSC staff stated that it was satisfied with the corrective measures taken or proposed to be taken by the MNI to prevent reoccurrence of a similar event.
27. The Commission commented about the actions taken by the worker and noted the importance of a strong safety culture. CNSC staff

- concurrent, and noted that one reason for issuing the order was to ensure that the MNI staff could work safely. CNSC staff stated that it would monitor and follow up on the actions taken by the MNI to comply with the order to ensure that the measures are and remain effective.
28. The Commission questioned if the subsequent actions taken by the worker to cover up a production loss were related to wanting to avoid consequences for the production loss. A representative from the MNI responded that the worker had no reason to fear retribution for the initial error, as it was understood that failed batches of Fluorine-18 can occur. The MNI representative noted that the facility had been operating for close to 35 years and never had a similar incident.
29. The Commission asked for more information about the worker's irradiation of his dosimeter to simulate the dose from the initial event. CNSC staff responded that it was originally not known that the worker had done this, but the high dose was discovered when the dose was reported by the dosimetry service. A representative from the MNI commented that the worker had done this under his own initiative, and admitted to having done it following repeated questioning.
30. The Commission asked for more information about the worker's training and experience. A representative from the MNI reported that the worker had been trained in the Fluorine-18 production, and had five years of experience at the MNI. CNSC staff noted that the investigation found that the worker may have been going through non-work-related stress, and that there were deficiencies in management oversight at the MNI. A representative from the MNI acknowledged this and stated that the MNI would be more careful in this regard.
31. The Commission enquired about CNSC staff's regulatory oversight of the facility. CNSC staff responded that the previous inspection was in 2010, given that it was a small facility that had been operating safely. CNSC staff noted that they had been planning to conduct an inspection at the MNI, and that the event accelerated the regulatory action. CNSC staff further noted that the event was unique for this and similar facilities. CNSC staff expressed the view that the existing inspection program and frequency was appropriate but noted that there may be a shift in focus for smaller isotope production facilities in general, given the greater production demand.

Centre hospitalier universitaire de Québec

32. The second verbal update was in regards to an event at the Centre

- hospitalier universitaire de Québec (CHUQ). CNSC staff explained that a private company, who did not have a licence with the CNSC to process or use radioactive substances, had been accessing and removing Technetium-99m radioisotopes from the CHUQ for its own use. CNSC staff explained that, since 2000, the company had a key to the facility in which the radioisotopes were kept, and that the contractor did not have the proper training or equipment to use the radioisotopes. The CHUQ reported the missing nuclear substance to the CNSC on March 3, 2015. CNSC staff stated that it conducted an investigation and determined that the company had removed sources seven times between 2014 and 2015. CNSC staff estimated the dose received by a company worker as being below the public dose limit of 1 mSv/a, and noted that it was unlikely that any other person had been exposed to more than 1 mSv/a. A representative from the CHUQ stated that the CHUQ had taken corrective measures in the short and long term to prevent a similar event in the future. CNSC staff stated that it was satisfied with the measures taken, and proposed to be taken, by the CHUQ in response to the event. CNSC staff noted that the president of the company had been issued a CNSC administrative monetary penalty as a result of this event.
33. The Commission, noting that seven incidents had occurred since January 2014, asked why it had taken so many of them for the CHUQ to notify the CNSC. The CHUQ representative responded that the past events were not identified at the time but during the CNSC investigation. The CHUQ representative explained that the CHUQ became suspicious in early February 2015 that Technetium-99m had been missing, and changed the locks for the facility in mid-February. After incidents on February 18 and February 28, the CHUQ notified the CNSC.
34. The Commission asked whether similar incidents had been taking place since the company received a key in 2000. The CHUQ representative responded that the CHUQ did not know if any further incidents had taken place besides those uncovered during 2014 and 2015.
35. The Commission asked for more details about the event and asked how the company had been able to remove the sources from the CHUQ facility. The CHUQ representative responded that a company worker entered the CHUQ facility at night when there were no other workers present, and noted that the CHUQ had not been aware that a person external to the CHUQ had a key to the facility. The CHUQ representative explained that the company had been given the key by CHUQ officials in 2000. The CHUQ representative confirmed that the security of the radioisotopes was assured by being kept behind a locked door.

36. The Commission asked for more details concerning the regulatory requirements for the sources. CNSC staff responded that the CHUQ is required to have a radiation protection program in place, which includes provisions for securing the radioisotopes. CNSC staff stated that the CHUQ is responsible for the use and control of its sources, and since a non-authorized person had access to the sources, the CHUQ was in non-compliance with regulatory requirements.
37. The Commission enquired about the control of inventory at the CHUQ. The CHUQ representative responded that the CHUQ has an inventory control and verification procedure, and explained that it was a verification of the inventory that led to the discovery that some nuclear substances had been removed.
38. The Commission enquired about the operating experience that could be gleaned from this event. CNSC staff responded that the event demonstrated the importance of access control, management oversight, and security measures.
39. The Commission asked which workers could access the radioisotopes. The CHUQ representative responded that the workers included doctors and technicians, and security and maintenance staff. The CHUQ representative noted that the authorized workers must be informed about the radiation risks, and stated that the radioisotopes should not be accessible to workers who are not authorized. The Commission noted that additional measures may be required to ensure the security of the sources, given the number of people who work at and visit hospitals.
40. The Commission asked if CNSC staff had spoken with the president of the company in question. CNSC staff responded that they were unable to reach the president of the company during the initial investigation, but that CNSC staff had spoken with CHUQ staff and the police, who had spoken with him. CNSC staff noted that CNSC staff had informed the president of the company of the administrative monetary penalty at the time it was being issued. The Commission acknowledged there would be a separate process to address the administrative monetary penalty.

INFORMATION ITEMS

Consolidated Interim Status Report for Ontario Power Generation's Darlington, Pickering and Western Waste Management Facilities

41. With reference to CMD 15-M22, CNSC staff presented a consolidated interim status report of the operational performance at OPG's Darlington, Pickering and Western Waste Management

- Facilities (WMFs) for the period from July 2010 to December 2014. CNSC staff stated that, over the reporting period, OPG met or exceeded requirements for each of the regulatory safety and control areas. CNSC staff stated that doses to the public associated with operations activities were well below the regulatory annual public dose limit of 1 mSv/a. CNSC staff noted an error in its CMD, and clarified that the value of the financial guarantee for the OPG decommissioning fund was \$15.453 billion. The Commission also received a presentation from OPG (CMD 15-M22.1) and two written interventions from the Power Workers' Union (CMD 15-M22.2) and the Canadian Nuclear Workers' Council (CMD 15-M22.3).
42. The Commission asked for more information about OPG's long-term plans and funding for decommissioning. A representative from OPG responded that the fuel waste from each NGS would continue to be stored in its respective site waste management facility until such time as a long-term solution is implemented by the Nuclear Waste Management Organization. The OPG representative noted that, if approved, OPG's proposed Deep Geologic Repository (DGR) for low and intermediate-level waste would be used for the low and intermediate level waste that is stored at the Western Waste Management Facility. The OPG representative explained that OPG has a long-term strategy for the waste, which includes cost estimates and ensuring that sufficient funds are set aside for decommissioning. CNSC staff noted that the decommissioning plan and financial guarantee are reviewed every five years and include contingency funds.
 43. The Commission asked for more information concerning welding issues that had been identified for a number of used fuel dry storage containers. A representative from OPG responded that OPG reviews the containers as part of its quality assurance program, and that it had determined through ultrasonic testing that the welds were not meeting requirements for a number of containers. An OPG representative noted that the welds were repaired and re-inspected, and stated that they now met requirements.
 44. The Commission enquired about a transportation incident that was reported, where a vehicle transporting waste was rear-ended. A representative from OPG responded that OPG has processes in place for such events, which includes contacting police and supervisors, as well as a transportation emergency response plan. The OPG representative stated that, in this incident, the driver correctly followed the process and noted that the emergency response plan was also used as a precaution. The OPG representative noted that the province is geographically divided into response zones, and that the response time to an event can be

- rapid.
45. The Commission noted that CNSC staff had included information about the various types of radioactive waste produced in Canada, including low-, intermediate-, high-level, and asked if it was possible to benchmark the waste volumes. A representative from OPG responded that OPG does benchmark the volumes against other countries, but noted that there are differences due to varying reactor technologies. The OPG representative noted that OPG also learns waste management practices from other countries.
 46. The Commission enquired about the management of Cobalt-60 and tritium. A representative from OPG responded that Cobalt-60 is used in a similar fashion to a fuel bundle, but that to date, all Cobalt-60 waste has been maintained in wet bays at the reactor sites and not in dry storage casks. Regarding tritium, an OPG representative stated that OPG considers tritium to be an asset rather than waste.
 47. The Commission noted that many countries have different definitions of waste types, and asked for clarification on the matter. CNSC staff responded that, in Canada, the waste types are defined in Canadian Standards Association (CSA) standard N292.0-14.⁴ CNSC staff acknowledged that different countries have different ways of categorizing waste, and noted that the CNSC would be reviewing this. A representative from OPG commented that the practical definitions of waste are based on dose rates from the waste packages, and noted that OPG uses waste acceptance criteria and thoroughly documents its waste inventory.
 48. The Commission enquired about the monitoring of emissions from the incinerator at the Western Waste Management Facility. An OPG representative stated that the incinerator is licensed under a CNSC licence as well as an Ontario Environmental Compliance Approval, which includes requirements for real-time monitoring of certain parameters. The OPG representative further stated that OPG has a monitoring plan based on a CSA standard, and that one way that OPG controls emissions is by controlling the waste that is incinerated.
 49. The Commission asked for more information about OPG's process for placing fuel in dry storage casks. A representative from OPG responded that the process includes cleaning and surveying the containers for contamination prior to movement to the waste storage facilities. CNSC staff described the measures it takes for the regulatory oversight of this process, including compliance

⁴ N292.0-14 - *General principles for the management of radioactive waste and irradiated fuel*, CSA Group, 2014.

- inspections. The Commission suggested that OPG could create a video to clearly demonstrate the process to the public. A representative from OPG agreed and noted that OPG conducts site tours for the public.
50. The Commission enquired about the management of liquid waste. A representative from OPG responded that liquid waste is solidified before storage, or incinerated in the case of waste oils.
 51. The Commission sought further information about issues with dry storage container flanges. A representative from OPG described the investigation that OPG had conducted in relation to this issue, and noted that the issue had been addressed. CNSC staff commented that containers must meet CNSC requirements before they can be used for transport.
 52. The Commission asked for more information about the service life of dry storage containers. A representative from OPG responded that the design life is 50 years but noted that with lifecycle management, including inspections and maintenance, they are expected to last considerably longer than that.
 53. The Commission enquired about the management of information relating to the waste inventory over time. CNSC staff responded that licensees are required to keep and maintain all relevant records, and noted that the CNSC inspections include verifying that records are maintained. A representative from OPG noted that OPG has maintained records for the waste facilities since they began operating. The OPG representative added that the original paper records had been converted to electronic records, including a bar code system, and noted that OPG continually maintains and verifies its records.
 54. The Commission sought views in the future challenges and priorities for the waste management facilities. CNSC staff suggested that the challenges would include the final disposal for the waste; using “reduce, reuse and recycle” to minimize waste; and knowledge retention. Regarding waste minimization, CNSC staff noted that the CNSC may need to enhance its waste regulations and guidance. A representative from OPG stated that challenges would include day-to-day fire protection; human performance; public support and Aboriginal engagement; and research and development for innovation to minimize or eliminate waste.
 55. The Commission asked for more information regarding OPG’s plans for innovation in relation to waste management. A representative from OPG responded that OPG was working with the CANDU Owners’ Group and other partners in the nuclear

- industry to pursue areas for research and development.
56. The Commission enquired about OPG's publishing reportable events on its website. A representative from OPG responded that OPG was open to improving its public information program in this manner.
57. The Commission also enquired about the elevated tritium levels in the groundwater at the Western Waste Management Facility site. CNSC staff responded that the site is extensively monitored and noted that there was no risk to the environment or human health associated with the elevated tritium levels. A representative from OPG explained that the elevated levels were caused by the condensation of tritium vapour from certain low-level wastes collecting and traveling through electrical conduits into a manhole that has a connection to the groundwater aquifer. The OPG representative noted that since OPG was able to identify the source of the elevated tritium levels, corrective measures had been put in place. The OPG representative noted that OPG would continue to monitor the tritium levels.
58. The Commission sought clarification regarding the security of the waste management sites. CNSC staff explained that the overall NGS sites were secure sites, with added security around the NGS and waste management facilities, in accordance with the *Nuclear Security Regulations*.⁵

CNSC Staff Update on the Incident Involving the Loss of Control of a CNSC Sealed Source

59. With reference to CMD 15-M23, CNSC staff presented an update on an incident involving the loss of control of a CNSC sealed source, which was originally reported to the Commission on November 5, 2014.⁶ CNSC staff described the incident, in which a cesium-137 sealed source that had been used in a training exercise at the Canadian Police College in Ottawa in August 2014 was discovered missing and recovered in November 2014. CNSC staff also described the follow-up investigation to the event, as well as the corrective actions that were taken as a result of the investigation. CNSC staff explained that the CNSC laboratory has a CNSC licence to use the sources, and that laboratory and field staff must follow procedures established under the CNSC licence to control the inventory of sealed sources under their possession. CNSC staff stated that, in this event, CNSC laboratory and field staff did not adhere to the procedures at several levels, resulting in

⁵ SOR/2000-209.

⁶ Refer to the *Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on November 5, 2014*.

- the ineffectiveness of the control and verification measures in place.
60. The Commission noted that a similar event had occurred in July 2012 and questioned why the subsequent event had occurred, given the corrective actions that had been put in place following the first event. CNSC staff responded that it was determined that the procedures in place following the July 2012 event were not sufficiently clear, and that the laboratory and field staff were not adequately trained to adhere to the procedures. CNSC staff further noted that more accountability and responsibility from CNSC management was required. CNSC staff noted that there had been follow-up inspections to the July 2012 event, including an independent expert review, and that it was determined that the operations at the laboratory involving nuclear substances were conducted in a safe manner. CNSC staff noted, however, the August 2014 event demonstrated that certain staff relied on the expertise of their colleagues and were not independently verifying that the procedures had been followed.
 61. The Commission acknowledged on the experience and expertise of CNSC staff but emphasized the seriousness of the event. The Commission noted that such an event can affect the credibility of the CNSC, and stated that it highlights the importance of CNSC staff remaining vigilant in all aspects of its work.
 62. Asked for more details regarding the event, CNSC staff explained that the objective of the training exercise was to find the hidden sealed source, and stated that the source had been found in the same place at which it was left behind. CNSC staff stated that it was confident that the source had remained in that location for the duration of it being out of CNSC control. CNSC staff noted that the event occurred because CNSC staff members did not follow procedures in verifying that the sources had been accounted for and correctly returned to the CNSC laboratory.
 63. The Commission enquired about the corrective actions to be taken. CNSC staff responded that one would be to have more than one staff member providing training to ensure that all sources are accounted for at the end of a training session. Additionally, CNSC staff stated that there would be monthly reports provided to senior managers to document the use of the nuclear substances and demonstrate that the procedures established under the CNSC licence are being adhered to.
 64. The Commission stressed the importance of CNSC staff following procedures, providing continued training and ensuring that accountability is in place and well-understood.

Update on the Fuelling Error at the McMaster Nuclear Reactor

65. With reference to CMD 15-M25, CNSC staff presented an update on the fuelling error at the McMaster Nuclear Reactor (MNR), which was originally reported to the Commission on November 5, 2014.⁷ CNSC staff described the event, which occurred on October 8, 2014, during which a fuel assembly was inadvertently left in an uncooled position in the reactor core; the reactor was subsequently shut down. After the error was corrected, the reactor was restarted against Operating Limits and Conditions (OLC) provisions, which required approval of McMaster's Nuclear Facilities Control Committee (NFCC) and the CNSC. CNSC staff also described the follow-up investigation to the event, as well as the corrective actions that were taken as a result of the investigation.
66. The Commission noted that one of the causes of the fuelling error was that the movement of the fuel assembly took place in a "difficult working environment," and questioned whether similar events had occurred in the past, given that the MNR had been operating since 1959. CNSC staff responded that although the conditions were difficult, there was no indication that a similar event had occurred in the past, which gave CNSC staff confidence that the process in place had been working. CNSC staff stated that the corrective actions from the event would improve the working conditions. A representative from McMaster concurred with CNSC staff and noted that the event occurred because the operator failed to verify the actions taken in moving the fuel assembly. The McMaster representative stated that the corrective measures would include improved lighting, tool handling and training, and noted that McMaster was investigating the use of underwater cameras. In addition, McMaster would have an employee dedicated to verifying the locations of the fuel assemblies and to assisting the reactor operator.
67. The Commission sought clarification regarding the event and layout of the MNR core. CNSC staff provided additional description and noted that the movement of fuel assemblies was a routing operation conducted about once per month. CNSC staff noted that the use of the uncooled position in the reactor core was likely done for convenience.
68. The Commission asked whether the corrective action plan included measures to ensure that it would not be possible to place fuel assemblies in uncooled positions. CNSC staff responded that this was not part of the corrective action plan because McMaster had taken that measure immediately following the event.

⁷ Refer to the *Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on November 5, 2014*.

69. The Commission asked for more information concerning the safety significance of the event. CNSC staff responded that, while the unauthorized restart was in violation of the Operating Limits and Conditions, the actual restart did not have any safety significance because the fuel had been correctly replaced. CNSC staff further stated that the safety significance of the fuel being in the uncooled position in the core was low. CNSC staff explained that if the reactor had not been shut down by the operator, the reactor would have shut down automatically if there had been a fuel failure. CNSC staff noted that any releases from a fuel failure would have been contained within the reactor building, with no, or negligible, consequences to the public and a relatively small dose to workers. CNSC staff further stated that McMaster would be performing further safety analysis of the event as part of its corrective action plan, and that CNSC staff would update the Commission on this matter in its annual report on small research reactor facilities in Canada.
70. The Commission asked for more information regarding the operating policies for the reactor. CNSC staff responded that, although McMaster has the Operating Limits and Conditions, McMaster did not have a specific process to review the restart of the reactor following an unusual event. In addition, a representative from McMaster stated that, rather than consult with the manager prior to shutting down the reactor, the reactor operator should have shut down the reactor immediately. The representative from McMaster noted that further training would be provided to ensure that the reactor operators correctly follow procedures. CNSC staff stated that it would have a greater regulatory focus on the McMaster safety culture. The Commission noted that reactor operators need to understand that they have the authority to shut down a reactor in the event of abnormal conditions.
71. The Commission sought confirmation that similar events had not occurred in the past. CNSC staff responded that McMaster was responsible for reporting all events. A representative from McMaster stated that such an event had never happened before and confirmed that it would have been reported if there had. The McMaster representative reiterated McMaster's commitment to timely and comprehensive reporting and sharing information with the CNSC.
72. The Commission suggested that McMaster could use safety culture surveys to better understand its safety culture. The McMaster representative stated that McMaster would be reviewing its safety culture and noted that it may consider this option.
73. The Commission asked if McMaster was on target for implementing its corrective action plan. The McMaster

- representative stated that it was, but noted that some of the broader items may end up being larger than anticipated.
74. The Commission noted the software that was used by McMaster to conduct the root cause analysis and asked if CNSC staff used it. CNSC staff responded that several members of CNSC staff have been trained to use the software.
75. The Commission enquired whether the event had been posted on the McMaster website. CNSC staff stated that the event had been posted on the McMaster website as well as the CNSC website. A representative from McMaster stated that it had at the time of the event, but noted that the corrective action plan had not been.
76. The Commission enquired about the demand for Iodine-125, which is produced at the MNR. A representative from McMaster stated that the demand has been stable in developed countries and growing in developing countries. The McMaster representative noted that the safety of the facility was the most important aspect of its operation, not meeting production demands.

Regulatory Framework Program: 2014-2015 Annual Report

77. With reference to CMD 15-M24, CNSC staff presented its 2014-2015 Annual Report on the Regulatory Framework Program. CNSC staff stated that, in the fiscal year 2014-2015, the CNSC solicited early public feedback on three discussion papers and published eight regulatory documents (REGDOCs). CNSC staff noted that it is anticipated that another 12 REGDOCs will be finalized by the end of 2015-2016, with a target of completing initial versions of all 58 REGDOCs in the CNSC regulatory framework document library by the end of FY 2017-18. CNSC staff also provided updates on its implementation of the Government of Canada's reform initiatives under the *Red Tape Reduction Action Plan*, and its engagement in exploring areas of regulatory collaboration through the Canada-US Regulatory Cooperation Council, and supporting the Major Projects Management Office and the Northern Projects Management Office. CNSC staff stated that it would continue to closely monitor and adjust the CNSC Regulatory Framework Plan to take into consideration changes in priorities, resource availability and changes to the regulatory environment and government priorities.
78. The Commission asked whether CNSC staff had received feedback from stakeholders on its regulatory framework and the overall impact of the CNSC's work to modernize its regulatory framework. CNSC staff responded that, while there is no initiative to assess the overall impact of the REGDOCs, the CNSC does receive feedback on each REGDOC. CNSC staff noted that some

concerns have been raised regarding the workload associated with the review and implementation of the REGDOCs, but noted that CNSC staff have been incorporating feedback and looking for ways to improve the process. CNSC staff described the “regulatory impact analysis– like statement” (RIAS –like statement) that was now being used for each proposed REGDOC to provide a summary of the expected regulatory impacts of the accompanying REDOC, such as regulatory objectives, and expected administrative costs where appropriate. CNSC staff noted that many of the REGDOCs were formalizing existing regulatory expectations but CNSC staff was aware that the implementation of new REGDOCs could result in additional costs and workloads to CNSC licensees. However, CNSC staff also noted that there was flexibility to implement new REGDOCs in a manner that would minimize impacts on affected licensees. The Commission noted the importance of having a clearly defined set of regulatory expectations.

79. The Commission asked for more information about CNSC staff’s outreach to smaller licensees, including the medical community. CNSC staff responded that they identify nuclear organizations to consult with, present at conferences, and consult with stakeholders across Canada. CNSC staff noted that they were working to improve their outreach to smaller licensees. The Commission suggested that CNSC staff should consider outreach to medical associations.
80. The Commission further enquired about the application of the REGDOCs to smaller licensees, such as for facilities that operate equipment to produce medical isotopes. CNSC staff responded that the CNSC was looking into consolidating licences to facilitate the regulatory oversight of such facilities. The Commission encouraged CNSC staff to ensure that there is harmonization between different REGDOCs.
81. The Commission sought insight into the application of the *Red Tape Reduction Action Plan*. CNSC staff described the activities it had undertaken to fulfill the objectives of the Government of Canada in determining the “administrative burden”, or administrative requirements, of the applications for CNSC licences. CNSC staff expressed the view that it was difficult to compare the “administrative burden” of different organizations due to the different administrative requirements for each one, as well as the value assigned to the different forms of “administrative burden.” CNSC staff emphasized that certain administrative requirements are necessary and appropriate to effectively oversee regulated facilities and activities, and should not be considered “burden.”
82. The Commission asked for more information regarding the long-term objectives for the regulatory framework program. CNSC staff

- stated that it was continuing to monitor opportunities to consolidate REGDOCs to avoid unnecessary duplication and to present the regulatory expectations in a clear and succinct manner. CNSC staff noted that once all initial REGDOCs are published, CNSC would focus on assessing the performance of its regulatory instruments in order to continue to maintain and improve them. CNSC staff noted that, although the REGDOCs are formally reviewed every five years, smaller adjustments can be made in a more streamlined process if required.
83. The Commission sought clarification regarding the design of the CNSC's regulatory instruments. CNSC staff responded that its regulatory instruments are developed taking into account its end users, adopting a performance-based regulatory approach where appropriate, and using a prescriptive approach when it is more suited to the subject and users. CNSC staff acknowledged that smaller licensees welcome a more prescriptive approach as it provides more clarity, but noted that a performance-based approach allows flexibility for innovation. The Commission noted the difficulty in having one set of regulatory documents apply to all licensees, given the many different types of nuclear facilities.
84. The Commission asked if financial assistance had been or would be provided to stakeholders without the financial means to participate in the review of the regulatory documents. CNSC staff responded that the CNSC participant funding program could be applied to the review of regulatory documents.
85. The Commission enquired about the process for reviewing CSA standards. CNSC staff responded that the CSA process allows for input from stakeholders, and noted that the CNSC encourages the CSA to reach out to different parties to participate in this process. CNSC staff noted that the CNSC has also leveraged the CSA process to get input from certain CNSC licensees. The Commission encouraged CNSC staff to seek input from industry associations, non-governmental organizations, and smaller licensees.
86. The Commission asked for more information concerning REGDOC-2.2.4, mentioned in the CNSC staff presentation, which pertains to worker fitness for duty. CNSC staff responded that the initial document focuses on worker fatigue and hours of work, but noted that there was another project underway that was working to develop a broader version to address all other areas of fitness for duty, including medical and physical fitness, psychological fitness, and drug and alcohol testing. CNSC staff noted that the consultation process for those aspects would take place later in 2015.

Closure of the Public Meeting

87. The meeting closed at 11:42 a.m. on June 18.



Recording Secretary

AUG 2 5 2015
Date



Secretary

AUG 2 5 2015
Date

APPENDIX A

CMD	DATE	Document No
15-M17	2015-05-15	e-Doc 4759538
Notice of Meeting of June 17 and 18, 2015		
15-M17.A	2015-05-20	e-Doc 4764377
Revised Notice of Meeting for June 17-18, 2015		
15-M18	2015-06-03	e-Doc 4770253
Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Wednesday and Thursday, June 17 and 18, 2015, in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa, Ontario		
15-M18.A	2015-06-11	e-Doc 4775726
Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Wednesday and Thursday, June 17 and 18, 2015, in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa, Ontario		
15-M19	2015-06-08	e-Doc 4777021
Approval of Minutes of Commission Meeting held March 25 and 26, 2015		
15-M20	2015-06-15	e-Doc 4562830
Status of power reactor units as of June 15, 2015		
15-M21	2015-05-07	e-Doc 4760151
Event Initial Report on Heavy Water Leak during Maintenance at Ontario Power Generation's Darlington Nuclear Generating Station on April 14, 2015		
15-M22	2015-04-28	e-Doc 4740807
Regulatory Oversight Report for 2010 – 2014 Ontario Power Generation Inc.'s Darlington, Pickering and Western Waste Management Facilities – Written submission from CNSC Staff		
15-M22.A	2015-06-11	e-Doc 4780268
Regulatory Oversight Report for 2010 – 2014 Ontario Power Generation Inc.'s Darlington, Pickering and Western Waste Management Facilities – Presentation from CNSC Staff		
15-M22.1	2015-05-18	e-Doc 4770769
Regulatory Oversight Report for 2010 – 2014 Ontario Power Generation Inc.'s Darlington, Pickering and Western Waste Management Facilities – Written submission from Ontario Power Generation		
15-M22.1A	2015-06-10	e-Doc 4779169
Regulatory Oversight Report for 2010 – 2014 Ontario Power Generation Inc.'s Darlington, Pickering and Western Waste Management Facilities – Presentation from Ontario Power Generation		

15-M22.2 2015-05-28 e-Doc 4770777
Regulatory Oversight Report for 2010 – 2014 Ontario Power Generation Inc.'s
Darlington, Pickering and Western Waste Management Facilities – Written submission
from the Power Workers' Union

15-M22.3 2015-05-28 e-Doc 4770779
Regulatory Oversight Report for 2010 – 2014 Ontario Power Generation Inc.'s
Darlington, Pickering and Western Waste Management Facilities – Written submission
from the Canadian Nuclear Workers' Council

15-M23 2015-06-02 e-Doc 4774671
CNSC Staff update on the Incident Involving the Loss of Control of a CNSC Sealed
Source – Written submission from CNSC staff (CNSC Laboratory)

15-M23.1 2015-05-29 e-Doc 4744013
CNSC Staff update on the Incident Involving the Loss of Control of a CNSC Sealed
Source – Written submission from CNSC staff (as the licensee)

15-M23.1A 2015-06-03 e-Doc 4775385
CNSC Staff update on the Incident Involving the Loss of Control of a CNSC Sealed
Source – Presentation from CNSC staff

15-M24 2015-05-29 e-Doc 4747254
2014-15 Regulatory Framework Program – Written submission from CNSC staff

15-M24.A 2015-06-09 e-Doc 4778734
2014-15 Regulatory Framework Program – Presentation from CNSC staff

15-M25 2015-05-29 e-Doc 4772773
Update on the Fuelling Error at the McMaster Nuclear Reactor – Written submission
from CNSC staff

15-M25.A 2015-06-10 e-Doc 4782403
Update on the Fuelling Error at the McMaster Nuclear Reactor – Presentation from
CNSC staff

15-M26 2015-06-03 e-Doc 4775729
Event Initial Report on the unplanned release of non-radioactive construction waste water
at the decommissioned Deloro Mine Site – Written submission from CNSC staff

15-M26.A 2015-06-11 e-Doc 4780021
Event Initial Report on the unplanned release of non-radioactive construction waste water
at the decommissioned Deloro Mine Site – Presentation from CNSC staff