

Canadian Nuclear
Safety Commission



Commission canadienne
de sûreté nucléaire

Minutes of the Canadian Nuclear Safety
Commission (CNSC) Meeting held
September 30 and October 1, 2015

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held Wednesday, September 30, 2015 and Thursday, October 1, 2015 at the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario.

Present:

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

M. Leblanc, Secretary
K. McGee, Assistant Secretary
D. Saumure, Senior Counsel
D. Carrière and M. Hornof, Recording Secretaries

CNSC staff advisors were: B. Howden, M. Santini, F. Rinfret, B. Poulet, D. Newland, M. Rinker, R. Buhr, R. Dwyer, K. Noble, C. Purvis, S. Lei, P. Thompson, M. Jones, A. McAllister, N. Riendeau, J. Amalraj, C. Dodkin, J. LeClair, M. Langdon, G. Groskopf and N. Kwamena

Other contributors were:

- NB Power: J. Nouwens
- Ontario Power Generation: K. Gilbert, K. Dehdashtian and S. Gregoris
- Cameco: L. Mooney, T. Smith and K. Nagy
- GE Hitachi: M. Ward and P. Desiri
- SRB Technologies: S. Levesque
- Nordion: R. Beekmans and J. Kavanagh
- Best Theratronics: S. Mason
- AREVA Resources: D. Huffman, J. Corman and J. Richards
- Ministry of Environment Saskatchewan: T. Moulding
- Ministry of Labour Relations and Workplace Safety, Mines Unit: L. Kaskiw

Constitution

1. With the notice of meeting CMD 15-M37 having been properly given and all eligible permanent Members of the Commission being present, the meeting was declared to be properly constituted.
2. Since the meeting of the Commission held August 20, 2015, Commission Member Documents CMD 15-M27, CMD 15-M35 and CMD 15-M37 to CMD 15-M43 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-M38.A, was adopted as presented.

Chair and Secretary

4. The President chaired the meeting of the Commission, assisted by M. Leblanc, Secretary, K. McGee, Assistant Secretary, and D. Carrière and M. Hornof, Recording Secretaries.

Minutes of the CNSC Meeting Held August 20, 2015

5. The Commission Members approved the minutes of the August 20, 2015 Commission Meeting as presented in CMD 15-M40.

STATUS REPORTS

Status Report on Power Reactors

6. With reference to CMD 15-M42, which includes the Status Report on Power Reactors, CNSC staff presented updates on the following:
 - On September 28, 2015, an electrical fault at the Darlington Nuclear Generating Station (NGS) Unit 1 caused the automatic electrical protection system to operate per design, and caused the loss of some electrical loads and potentially damaged some electrical buses and associated equipment. Operators responded in a timely manner to the event and in accordance with established procedures. These procedures were found to be effective. CNSC staff informed the Commission that Ontario Power Generation (OPG) identified that the event was caused by a pinhole leak in a copper service water line located above the affected room. CNSC staff reported that OPG is investigating for damage to electrical buses and associated equipment. CNSC staff stated it will monitor OPG's response to this event and will update the Commission if matters of interest become apparent. There was no threat to the safety of the public, employees or the environment as a result of this event.
 - CNSC staff has no safety concerns with information presented in CMD 15-M42 regarding the request by the Independent Electricity System Operator (IESO) to delay the Pickering NGS Unit 6 maintenance outage.
 - Point Lepreau NGS reactor power is at 35 percent full power. Synchronization to the grid is pending calibration of a level control valve on the non-nuclear condensate system. NB Power tested the containment system and confirmed it is available.

7. The Commission enquired about the Darlington NGS Vacuum Building maintenance outage and asked if work in other areas of the plant is also being undertaken during this outage. An OPG representative reported on the status of work in the Vacuum Building, explaining that OPG is replacing valves and inspecting the concrete structures. OPG is also replacing valves and piping on the emergency service water system. CNSC staff stated that it is performing inspections in areas that are otherwise not accessible when the reactors are operating. This outage also allows OPG to validate assumptions that were made about the status of components prior to the start of refurbishment.
8. The Commission enquired about the Pickering NGS Unit 1 generator stator. An OPG representative explained the operation of a stator in a nuclear power plant and the reasons for derating Unit 1, which are related to reduced cooling capacity. The OPG representative responded that OPG closely monitors this system and has had to reduce the power on units at Pickering in the past for this reason. The OPG representative added that OPG expects the second heat exchanger to be returned to service by October 2, 2015. The Commission asked if the CNSC will inspect the heat exchanger before it is returned to service. CNSC staff stated there is no need for CNSC regulatory oversight during the heat exchanger return-to-service and finds minimal safety risk regarding this event.
9. The Commission enquired about the lost time injury (LTI) reported at the Pickering NGS. An OPG representative explained that the worker fell and aggravated a pre-existing knee injury. The worker has not yet returned to full duties.
10. The Commission enquired about the request from the IESO to delay the Pickering NGS Unit 6 planned outage. An OPG representative responded that OPG received the request for delay in order to mitigate an increased electricity demand resulting from the Darlington planned maintenance outage and from the unusually high September temperatures. The OPG representative added that OPG does not often receive requests from IESO to change the timing of maintenance outages. CNSC staff noted that these types of requests do not normally have a safety impact since planned maintenance outages allow for schedule flexibility. Safety implications of delaying regular testing required during planned maintenance outages are weighed against repercussions of not granting IESO requests.
11. The Commission enquired about the root cause of the Pickering NGS Unit 4 turbine governor valve trip circuit failure. An OPG representative responded that while OPG has not yet determined

- the root cause, components at nuclear power plants are designed to fail in a safe manner. OPG will conduct a detailed review, examine the cause of loss of the power supply to this component, and will share findings of its technical investigation with the CNSC.
12. Regarding the containment isolation valve malfunction at the Point Lepreau NGS, the Commission asked why the valve malfunctioned. The NB Power representative explained that the testing requirements for this type of valve are strict and that the valve was not proven leak tight during a test.
13. The Commission also enquired about the eight-hour repair limit which requires the Point Lepreau reactor to be shut down and depressurized if repairs cannot be completed during that time frame. CNSC staff explained that time limits vary depending on the system involved and the amount of time the system can be deemed unavailable taking into account the probability of an accident occurring. The CNSC requires licensees to have testing programs to ensure systems are available to maintain safety. The NB Power representative reported that the repairs were completed following NB Power's procedures, and the correct course of action to follow at the time was to first put the reactor in a safe shutdown state in accordance with regulatory requirements and then to execute the repairs. CNSC staff stated that the time required to repair the valve was as expected.

INFORMATION ITEMS

Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014

14. With reference to CMD 15-M39 and CMD 15-M39.A, CNSC staff presented its annual report "*Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014*" (NPFDR Report) to the Commission. The NPFDR Report provides information about the results of CNSC staff's analysis of the safety performance of uranium and nuclear substance processing facilities, with a focus on the three safety and control areas (SCAs) of radiation protection, environmental protection, and conventional health and safety. The NPFDR Report also discusses public information programs, ratings for all 14 SCAs, reportable events, any significant facility modifications, and areas of increased regulatory focus.

Part 1: Uranium Processing Facilities

Findings from CNSC staff

15. CNSC staff reported that, through its evaluations, it was of the

opinion that uranium processing facilities operated safely during 2014 and met performance expectations for the health and safety of workers, the protection of the environment, and Canada's international obligations. All uranium processing facilities received at least a "satisfactory" performance rating for each of the SCAs, with GE Hitachi Canada (GEH-C) receiving a "fully satisfactory" rating in the environmental protection SCA and Blind River Refinery (BRR) receiving a "fully satisfactory" rating in the conventional health and safety SCA.

Comments from Licensees

16. The Cameco representative reported that Cameco is committed to ensuring its operations remain safe, clean and reliable, and summarized key improvements in the SCAs of radiation protection, environmental protection, and conventional health and safety.
17. The GEH-C representative discussed changes in company leadership, stating that GEH-C is committed to continuously improve its Public Information Program (PIP). Its management system, commitment to environmental health and safety, and commitment to fully meet or exceed CNSC expectations in all SCAs remains unchanged through this organizational change.

General

18. The Commission expressed its satisfaction with the 2014 NPDF Report, noting that it is a good improvement from past NPDF reports. The Commission suggested editorial changes to the NPDF Report.
19. In regards to CMD 15-M39.2 from the Canadian Nuclear Workers' Council, the Commission asked if Cameco's Port Hope facilities United Steel Workers' (USW) unions have received an award at the USW Health, Safety & Environment Conference in the past. A Cameco representative responded that it is the first time the Cameco Port Hope facilities USW unions have received the award for their efforts in worker health and safety initiatives during this conference.
20. Further to the submission from the Canadian Nuclear Workers' Council, the Commission enquired about the relationship between CNSC inspectors and union representatives. CNSC staff explained the relationship between CNSC inspectors, the union and worker representatives, which allows workers to voice their concerns and provide feedback on operations. CNSC staff explained that requests to meet with CNSC inspectors are rarely made and that the types of concerns inspectors receive mostly relate to conventional health and safety matters. Cameco and GEH-C representatives

- reported that they welcome interactions between their workers/union representatives and CNSC inspectors.
21. The Commission asked if sufficient feedback was received in response to the review of the NPDF Report, and if more efforts are required to involve other stakeholders to review the performance of licensees and to review CNSC staff's assessments. CNSC staff noted its consultation efforts relating to the review of the NPDF Report, and stated that it used many different avenues to engage the public and encourage participation. CNSC staff stated that it is not aware of any significant public preoccupations relating to the operation of these facilities.
 22. The Commission enquired about the efforts of licensees with regards to ensuring radiation doses are kept ALARA,¹ and asked how facilities can achieve "fully satisfactory" ratings if they must continually reduce doses to ALARA. CNSC staff responded that it expects continual improvement as part of facility operations. A "satisfactory" rating is given to licensees for SCAs that are continually improved. A "fully satisfactory" rating is given to licensees for SCAs that do not require any major improvement and for licensees showing superior performance in a particular SCA.
 23. The Commission asked why regulatory oversight in regards to licensing and compliance activities are more prevalent for some facilities. CNSC staff explained that its oversight program is risk-informed; facilities with complex processes of greater risk have increased regulatory oversight and the performance of licensees also has a role in the efforts of CNSC staff. CNSC staff also stated that it verifies corrective actions that arise from events and inspections, which can increase the number of oversight activities. The number of person days for compliance may go down in 2015 due to a reduced number of events to date.

Cameco's Blind River Refinery

24. The Commission enquired about the award of funding from the Participant Funding Program (PFP) for a meeting held in October 2014 between CNSC staff and the Mississauga First Nations Land and Resource Committee to discuss various regulatory topics regarding the BRR facility. CNSC staff explained that the PFP has been broadened to further encourage Aboriginal and public consultation, and the eligibility of activities has been expanded. Requests for funding go through the same application and review process, and the Funding Review Committee is involved in all funding decisions.

¹ ALARA: As low as reasonably achievable, social and economic factors being taken into account.

25. In regards to the four action levels exceedances related to workers' radiological exposures at the BRR, the Commission asked what corrective measures were applied to prevent future radiological dose exceedances. A Cameco representative explained that workers working in the raffinate area have a higher potential for radiation exposure due to the presence of higher external radiation hazards. Action levels are set to indicate a potential loss of control and trigger follow-up investigations and recommendations of corrective actions. The Cameco representative noted that Cameco has a robust and mature radiation protection program in place to ensure that worker doses remain ALARA, and reported that corrective actions were implemented to limit the number of exceedances going forward. CNSC staff reported that all workers' radiological doses were well below the corresponding CNSC dose limits and that the action level exceedances posed no risks to their health and safety. CNSC staff stated that the action levels relating to workers radiological exposures at the BRR are effective and are strict. The Commission requested further information regarding the corrective actions that were implemented in response to the four action level exceedances in 2014.

ACTION
by
December
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26. The Commission enquired about the increase in groundwater uranium concentration at the BRR from 2013 to 2014, and requested the value of the established limit for uranium in groundwater. CNSC staff reported that the increase in groundwater uranium concentration is small, and that it will continue to monitor this trend. CNSC staff reported that the concentration is lower than the Ontario Drinking Water Quality Standards² (ODWQS) of 20 micrograms per litre ($\mu\text{g/L}$), but that it is not appropriate to compare groundwater quality on an industrial site to the ODWQS since it is not a source of potable water. There are provisions in various regulations to control contamination of groundwater and, once the groundwater becomes contaminated, CNSC staff has a process in place to perform technical assessments and to identify mitigation measures. A Cameco representative explained that Cameco has a comprehensive groundwater monitoring program at the BRR, and that it will investigate further if the very low concentrations of uranium in groundwater continue to increase.

27. The Commission further enquired about groundwater monitoring at BRR and asked why the interim Ontario Provincial Water Quality Objective³ (PWQO) is not being used as the limit for uranium concentration in groundwater. CNSC staff explained why the PWQO is lower than the ODWQS and why the PWQO is not an appropriate standard for groundwater monitoring.

² Ontario Regulation (O. Reg.) 169/03.

³ Ministry of Environment and Energy, *Water Management: policies, guidelines, provincial water quality objectives* (July, 1994)

28. The Commission enquired about the event at the BRR relating to a misplaced dosimeter. CNSC staff explained the sequence of events that led to the dosimeter recording a whole body and skin dose that exceeded the corresponding action level, as well as Cameco's corrective actions. CNSC staff stated that it was concerned with investigation results and requested that Cameco implement more proactive approaches at the BRR to ensure that they have adequate oversight to prevent similar events from reoccurring. CNSC staff requested that Cameco benchmark its dosimetry handling practices with similar facilities and Cameco submitted the requested benchmark study, which is currently being reviewed by CNSC staff. CNSC staff will conduct an inspection during this fiscal year to assess the implementation of Cameco's corrective actions.
29. Further to this event, the Commission asked how the worker's revised dose was calculated. CNSC staff explained that the worker's activities for the month and the doses of workers performing similar work activities were assessed in the calculation of the dose. The Commission asked if there is a process in place to keep track of dose exceedances and dose re-evaluations. CNSC staff responded that the National Dose Registry does not keep track of doses that have been re-evaluated; however, CNSC staff will monitor the performance of this licensee in terms of conformance with procedural requirements, and identify non-compliances through baseline or reactive inspections. The Cameco representative stated that Cameco's investigative process also evaluated the worker to determine if further action is required.

Port Hope Conversion Facility

30. The Commission enquired about the Port Hope Conversion Facility (PHCF) groundwater quality and the requirement to remove contaminants of potential concern (COPCs) by pump-and-treat wells. CNSC staff stated that it had not observed an increase in groundwater contaminants, which exist from historical practices, and explained that contaminants in groundwater take a long time to reach the groundwater monitoring wells, the pumping wells and the shoreline. CNSC staff discussed contaminated soil remediation plans being developed, which are likely to reduce uranium concentration in groundwater. The pump-and-treat wells, which are a temporary measure, collect groundwater for treatment until remediation can be completed to reduce the concentration of COPCs from reaching the harbour.
31. The Commission enquired about the inclusion of doses to contractors in the presentation of average and maximum effective doses to Nuclear Energy Workers (NEWs), stating that it could artificially reduce the average doses to NEWs. CNSC staff responded that it recommended that Cameco start including data on

doses to contractors who are identified as NEWs because they represent approximately 50 percent of the PHCF workforce. These dose statistics should include all exposed individuals and provide an indication of licensees' management of doses to persons. CNSC staff provided further information regarding the trends of average doses to NEWs.

Cameco Fuel Manufacturing Inc.

32. With respect to Cameco Fuel Manufacturing Inc. (CFM), the Commission asked how data obtained using one dosimetry method can compare to data obtained using a newer but different dosimetry method. CNSC staff explained the change in internal dosimetry method at CFM, stating that Cameco determined that the lung counting method was superior to urinalysis for ascertainment of dose. Since the two methods are significantly different, the dose measurements are also different in terms of accuracy and precision. The lung counting method is more conservative. CNSC staff stated that CFM reported using the new lung counting method for the first time in 2014, and CNSC staff will monitor data moving forward to ensure trends are identified.
33. The Commission asked why six of the 20 surface water samples at CFM exceeded the interim PWQO. CNSC staff stated that there is no evident trend due to the sporadic nature of the exceedances, and that CNSC staff continue to examine the monitoring information and Cameco's investigations.
34. The Commission enquired about the corrected uranium discharges to the sewer from 2010 to 2014 at CFM, and asked why the event, which required a correction to the effluent monitoring results, does not constitute a major process failure affecting the safety performance of the facility in the environmental protection SCA. CNSC staff explained that Cameco had not previously included groundwater volumes in their calculations of uranium releases to the sewer, resulting in incorrectly calculated loadings. The recalculated overall releases to the sewer are low and remain less than 0.5 percent of the derived release limit. CNSC staff stated that the environmental impacts of this calculation error are not significant. CNSC staff also stated that this event was not considered significant enough to devalue the overall rating for the facility in the "environmental protection" SCA.
35. Further to the above, the Commission asked if CNSC staff should have detected this error sooner, or if the Independent Environmental Monitoring Program (IEMP) would have caught this error. CNSC staff responded that it is currently assessing ways to verify the accuracy of data it receives from licensees. The IEMP occurs outside of the facility perimeter; therefore, this program

could not have detected this error. The Cameco representative stated that Cameco has agreed to an annual verification process for regulatory data calculations by the CNSC. CNSC staff stated that it will change its compliance program to ensure changes to environmental management systems are appropriately captured in the licensees' own programs. The Commission stated that it looks forward to further discussions regarding CNSC staff's approach to prevent errors in reportable data.

GE Hitachi Nuclear Energy Canada Inc.

36. The Commission enquired about the beryllium hazard at the GE Hitachi Nuclear Energy Canada Inc. (GEH-C) Peterborough facility. A GEH-C representative explained the process that uses beryllium at the Peterborough facility, as well as controls that are in place to protect workers from the inhalation hazard beryllium poses.
37. The Commission enquired about the increase in maximum effective dose to a member of the public in 2014 at the GEH-C Toronto facility resulting from changes in measurement instrumentation and asked if there are other exposure pathways not currently being considered which could result in underestimated public doses. A GEH-C representative responded that all pathways are monitored and were monitored prior to 2014. Gamma exposures were not included in the overall doses until 2014 because instrumentation previously used to capture this information was not sensitive enough to detect radiation levels below background levels. The GEH-C representative stated that their new instrumentation provides more sensitive readings.
38. The Commission requested an update regarding the implementation of GEH-C's public information program. A GEH-C representative explained GEH-C's efforts in regards to the implementation of its new public information program, noting that it consulted with CNSC staff to ensure regulatory expectations were met and industry best practices were applied. GEH-C has also created a new position within its organization for a community relation and communications manager to ensure the public information and disclosure program is appropriately applied. The GEH-C representative also provided information with respect to its Community Liaison Committee, in which three members of the public participate.
39. The Commission enquired about the large number of self-assessment inspections and investigations that GEH-C conducts to ensure compliance and continuous improvement of its conventional health and safety program. A GEH-C representative responded that internal inspections, which do not exclusively relate to licensed

activities, are performed for GEH-C's own due diligence and for continual improvement to optimize processes. The GEH-C representative stated GEH-C has comprehensive software to track all investigations and responses and that CNSC staff can request this information during CNSC inspections. CNSC staff confirmed GEH-C's description of its conventional health and safety program inspections and investigations, and reported that it has reviewed GEH-C's inspection results and findings during past CNSC inspections.

Part 2: Nuclear Substance Processing Facilities

Findings from CNSC staff

40. CNSC staff reported that, through its evaluations, it was of the opinion that uranium processing facilities operated safely during 2014 and met performance expectations for the health and safety of workers, the protection of the environment, and Canada's international obligations. All uranium processing facilities received at least a "satisfactory" performance rating for each of the SCAs, with SRB Technologies (Canada) Inc. (SRB Technologies) receiving a "fully satisfactory" rating in the conventional health and safety SCA and Nordion (Canada) Inc. (Nordion) receiving a fully satisfactory rating in the environmental protection SCA.

Comments from Licensees

41. Representatives from SRB Technologies, Nordion and Best Theratronics Limited (BTL) all reported having reviewed the NPDF Report and concurred with its contents.

General

42. The Commission asked why extremity and skin doses were excluded from the report for some of the facilities. CNSC staff responded that they were excluded for the facilities that do not have hazards that would contribute to skin or extremity doses.

SRB Technologies (Canada) Inc.

43. The Commission asked why some residents requested to exclude their previously monitored wells from SRB Technologies' monitoring program in 2014. An SRB Technologies representative explained the reasons some of the wells were excluded, reporting that they all have very low concentrations of tritium. CNSC staff confirmed that the SRB Technologies groundwater monitoring program is acceptable. CNSC staff also stated that the tritium levels are trending downwards and are all well below the ODWQS. The reduction in the number of wells being monitored does not

concern CNSC staff.

44. The Commission asked how many of the expired signs received by SRB Technologies were disposed and how many were reprocessed. A representative from SRB Technologies responded that less than 10 percent of signs returned to the facility are reprocessed into new products. All other signs are disposed at the Canadian Nuclear Laboratories (CNL) licensed facility located in Chalk River, Ontario. CNSC staff noted that it will specify the recipient facility in future NPDF reports.

Nordion (Canada) Inc.

45. The Commission asked for an update on Nordion's improved export process that was implemented following the Administrative Monetary Penalty (AMP) issued on September 3, 2014. A Nordion representative reported that they have been fully compliant with the notification requirements of their export licence. Additional verification and oversight was added to their existing process and an in-depth internal review was conducted. The Nordion representative stated that they engaged a third-party expert who concurred with Nordion's conclusions and identified additional improvements. Nordion is now using an electronic platform for their notifications to reduce the possibility of human error. Nordion expects to remain compliant with the notification requirement of their export licence.

Best Theratronics Limited

46. The Commission enquired about the severity of the injury that occurred at Best Theratronics Limited (BTL) in 2014. A BTL representative explained the event, which resulted in the worker being off work for six days. The Commission asked why this LTI was not included in Appendix G of the NPDF Report. CNSC staff noted this was an oversight and will include the information as part of its final publication of the NPDF Report.
47. The Commission sought comments from BTL regarding the amended Designated Officer Order issued to BTL on September 28, 2015 following an Opportunity to be Heard by the Commission. A BTL representative responded that they have had the chance to review the amended Order and are working with CNSC staff to meet the conditions of the Order within the timeline described therein.

Regulatory Oversight Report for Uranium Mines and Mills in Canada:
2014

48. With reference to CMD 15-M35 and CMD 15-M35.A, CNSC staff presented its annual “*Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2014*” (UMM Report) to the Commission. This report provides information on licensee performance in the 14 SCAs with a focus on radiation protection, environmental protection and conventional health and safety. The UMM Report also provides information about the CNSC’s 2014 IEMP results for the Key Lake Mill, CNSC staff’s findings from and follow-up on the two 2015 Key Lake calciner events and a follow-up on the Mount Polley event. CNSC staff stated that, through its evaluations, it was of the opinion that uranium mine and mill facilities in Canada operated safely during 2014 and met performance expectations for the health and safety of workers, radiation protection and environmental protection.
49. CNSC staff corrected two minor errors in Tables 1-1 and 1-2 of CMD 15-M35. CNSC staff stated that the corrected values did not change the conclusions drawn in the UMM Report.
50. Although several minor improvements for future UMM Reports were noted, the Commission expressed its overall satisfaction with the UMM Report.

Comments by the Cameco Representative

51. The Cameco representative stated that health and safety and protection of the environment were Cameco’s top priorities, and that Cameco was proud of its performance in these areas. The Cameco representative noted that Cameco was compliant with all environmental regulations and that the Eastern Athabasca Regional Monitoring Program (EARMP) continued to demonstrate that water and traditional country foods in the region of Saskatchewan’s uranium mines and mills remained safe to consume.
52. The Cameco representative provided the Commission with an update on Cameco’s review of the findings from the Mount Polley tailings dam breach and confirmed the geotechnical stability of the above-ground tailings management facilities at both Rabbit Lake and Key Lake. The Cameco representative also stated that Cameco had liaised with Northern Saskatchewan communities to increase their understanding of the tailings management facilities.

Interventions – Written Submissions

53. The Commission considered two written submissions in reference to the UMM Report. The Commission noted that a submission

from an individual expressed satisfaction that the uranium mine and mill operators applied lessons learned from the Mount Polley tailings dam breach.

54. The Commission noted that no interventions were received from Aboriginal communities in Northern Saskatchewan and enquired about why this may have been the case. CNSC staff responded that it actively engaged with Aboriginal communities in Northern Saskatchewan, provided information about its consultation activities and stated that, while CNSC staff did not want to speak on behalf of the Aboriginal communities, this may have been one of the reasons that no comments from these communities were submitted. The Cameco representative responded that, while Cameco also did not want to comment on behalf of the Aboriginal communities, Cameco frequently consulted with its Northern Saskatchewan stakeholders, providing them with participation opportunities, and stated that recent polls showed that 77 percent of Saskatchewan residents supported the continuation of Cameco operations.

General Questions

55. In regards to the two Cameco Key Lake Mill calciner events, reported to the Commission on February 4, 2015⁴ and March 25, 2015,⁵ the Commission enquired about when Cameco's new calciner would be operational. The Cameco representative responded that the new calciner was undergoing commissioning activities and was expected to be operational in early 2016, with the existing calciner remaining in the facility as a back-up system.
56. The Commission further enquired about whether Cameco had fully inspected the calciner system after the calciner events. The Cameco representative explained that the calciner was voluntarily shut down for a thorough inspection after the first event, noting that the cause of the second event was not visually observable at that time and that, in response to the second event, additional inspection ports were installed on the system. The Cameco representative also stated that root cause analyses found that the two events were not related. CNSC staff stated that satisfactory corrective actions were taken by Cameco in response to the events.
57. The Commission requested additional information about the sulphuric acid plants located at the Cameco and AREVA sites. The Cameco representative responded that Cameco used sulphuric acid as a reagent in its leaching processes and in its water treatment

⁴ Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on February 4, 2015, e-Doc 4723942.

⁵ Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on March 25 and 26, 2015, e-Doc 4790116.

- plants, and that sufficient sulphuric acid was produced at the plants to meet the needs of Cameco's operations. The AREVA representative stated that the sulphuric acid produced at its McClean Lake operation was used for the same purposes.
58. The Commission enquired about whether Cameco was conducting exploration activities at Rabbit Lake. The Cameco representative responded that exploration was being conducted at Rabbit Lake and that additional uranium ore reserves had been found at the Eagle Point Mine.
59. The Commission expressed satisfaction with the decommissioning timelines presented in the UMM Report and requested confirmation that the financial guarantee amounts maintained by the licensees were adequate. CNSC staff confirmed that the financial guarantees were reviewed regularly and were adequate.
60. The Commission asked about key challenges and opportunities that had been identified in the three SCAs that were of regulatory focus in 2014. CNSC staff provided the Commission with information on areas of increased licensee surveillance and explained how CNSC staff determined the areas of regulatory focus. The AREVA representative responded that AREVA's focus for 2015 was ramping up production at McClean Lake while ensuring a high level of environmental protection and conventional health and safety. The Cameco representative stated that Cameco was focussing on environmental protection initiatives, as well as on ensuring that Cameco adequately adapted to increased regulatory oversight in the metal mining industry.

Conventional Health and Safety

61. The Commission enquired about whether licensee conventional health and safety statistics included data for contractors. CNSC staff responded that these statistics included all employees and contractors that worked at a site during the year.
62. The Commission enquired about why the LTI severity rate was reported over two years in the UMM Report, as this was not the industry standard. The Government of Saskatchewan representative responded that it shared the Commission's understanding of LTI and severity rate statistics. The Commission requested that CNSC staff clarify the LTI and severity rate data. Shortly after the public meeting, on September 30, 2015, the Commission was provided with information from the Government of Saskatchewan representative clarifying LTI severity rate data and indicating that

CNSC staff's interpretation of the data was correct.⁶ Further to this information, CNSC staff has indicated that it would clarify this information in future UMM Reports.

63. The Commission expressed satisfaction with the near-miss incident information in the UMM Report and enquired about whether CNSC staff had a systematic way of reporting on these incidents to the Commission. CNSC staff responded that, although not reportable events, CNSC staff reviewed licensee data regarding near-miss incidents and stated that it would consider how this information could be included in future UMM Reports. The AREVA representative added that, in its annual reports, AREVA reported all serious near-miss incidents.

Environmental Protection

64. The Commission enquired about whether the reclamation activities at Cameco's Rabbit Lake operation were progressing as expected. CNSC staff responded that it was satisfied with the progress of the reclamation activities at Rabbit Lake and noted that Cameco had a robust program to ensure successful revegetation of reclaimed sites.
65. The Commission further enquired whether Cameco had considered transferring the reclaimed properties at Rabbit Lake into the Institutional Control Program⁷ (ICP). The Cameco representative responded that Cameco had not yet considered this option for those properties, but would consider the Institutional Control Program for them when they were safe, stable and recovering. CNSC staff added that, prior to making a recommendation to the Commission for the exemption of properties from CNSC licensing, CNSC staff would perform a thorough review to ensure that the properties were stable and improving.

Effluent and Emissions Control

66. The Commission requested additional details about the cracked pipe that resulted in the May 19, 2014 spill of 10,000 L of contaminated water at Rabbit Lake. CNSC staff responded that the contaminated water was captured in the Rabbit Lake in-pit tailings management facility and that no water escaped to the environment.

⁶ As reported in an email from Len Kaskiw, Ministry of Labour Relations & Workplace Safety, Government of Saskatchewan, received by CNSC staff on September 30, 2015, "Lost days or modified work days that carry over into the next year will accumulate up to 12 months following the original injury date. After the 12-month period, the days lost or modified work days will no longer be reported. In the case of Lost Time Injury or Modified Work Injury, the day of the incident is not counted as a "Lost Day" or a "Modified Work Day." The Lost Time Injury or Modified Work Injury is reported for the month in which the injury occurred. The days lost or modified work days are reported for the month(s) in which the time was actually lost or worked modified duties."

⁷ Statutes of Saskatchewan (S.S.) 2014, c. R-4.21 – *The Reclaimed Industrial Sites Act*.

- The Cameco representative confirmed this information, noting that the environmental impact of the spill was considered minor.
67. The Commission requested additional information about the increasing uranium effluent concentration at Cigar Lake. CNSC staff responded that the uranium effluent concentration at Cigar Lake had been expected to increase in 2014 since Cigar Lake began operations during that year, but noted that the uranium concentration was still well below the CNSC objective. CNSC staff further stated that the uranium effluent concentration was not expected to rise as significantly in the future, but that CNSC staff was actively monitoring this data. The Cameco representative added that data for 2015 did not show a significant increase in uranium effluent concentration when compared to 2014 data and that Cameco was committed to optimizing water treatment.
68. The Commission enquired about why the results of the *Daphnia magna* effluent toxicity test⁸ were not reported in the UMM Report and whether this test was conducted at uranium mines. CNSC staff responded that, at this time, the *Daphnia magna* test was only conducted as a monitoring test by the mining industry whereas passing the rainbow trout acute-lethality test⁹ was a regulatory requirement for all metal mines in Canada. CNSC staff further stated that licensees reported their *Daphnia magna* test results to the CNSC but that this data was not included in the UMM Report since it was not a regulatory requirement. CNSC staff noted that, in the future, it will report on the *Daphnia magna* test results only if there are findings of safety significance.
69. The Commission asked about the validity of reporting the average concentrations of total suspended particulate (TSP) in air from three separate monitoring stations. CNSC staff responded that it had reviewed the licensees' annual compliance reports, which reported all values for TSP concentrations at the mines and mills, and that no areas of concern had been identified. CNSC staff agreed that the average value may not be appropriate and will look at providing peak TSP concentrations in future reports. The Saskatchewan Ministry of Environment (SE) representative added that TSP concentration results included all environmental factors around the monitoring stations and that results had shown that the air quality in the vicinity of uranium mines in Northern Saskatchewan was well within standards.
70. The Commission further enquired about increased air emissions at

⁸ In this effluent toxicity bioassay, *Daphnia magna* are used to test for the concentration of an effluent's toxicity by determining the lethal concentration, 50, (LC50), or the half maximal effective concentration (EC50) of an effluent.

⁹ The rainbow trout acute-lethality test uses rainbow trout fingerlings or swim-up fry by placing them into undiluted effluent for 96 hours. If more than half of the fish die, the effluent is deemed to be acutely lethal.

Key Lake. The Cameco representative responded that, although the emissions to air had increased slightly, they were still well within guidelines. The Cameco representative added that, should a trend of concern be identified, Cameco would investigate it further.

71. The Commission enquired about why the average concentration of radon in ambient air at Cigar Lake had more than doubled from 2013 to 2014. The Cameco representative responded that this value was not accurate because a sample at a monitoring station had been compromised, but noted that the reported ambient radon air concentration was still well below the CNSC reference level.

Environmental Monitoring

72. The Commission requested additional information on the EARMP methodologies that were used to ascertain that the consumption of traditional country foods did not present a risk to human health. The SE representative responded that the doses received by residents consuming traditional country foods were calculated based on measurements from the samples collected. CNSC staff added that it had conducted a detailed review of and had validated the methods used to calculate dose estimates in the EARMP reports.
73. The Commission asked about whether the local residents were confident in the EARMP results. CNSC staff responded that residents in Northern Saskatchewan communities continued to harvest and consume traditional country foods and that the Northern Saskatchewan Medical Health Officer encouraged the consumption of traditional country foods.
74. The Commission asked about which chemical concentrations were found to be above guidelines in the EARMP data. The Cameco representative responded that mercury was found to be elevated in one Key Lake sample, but noted that Cameco's monitoring had shown that Key Lake was not a source of mercury for any receiving environment and that the sample was likely contaminated. CNSC staff confirmed this information.
75. The Commission enquired about the SE project studying the cumulative environmental impact of all industrial activities in the Athabasca Basin. CNSC staff provided information about the project, noting that it included impacts from industrial activities conducted in the Athabasca Basin in both Alberta and Northern Saskatchewan, and that the project results as reported in the UMM Report were validated by CNSC staff.

76. The Commission requested clarification on the water sampling locations used in the 2014 Key Lake IEMP and why water at those locations was not considered a source of drinking water. CNSC staff responded that measurements had shown that water which was sampled offsite had met the *Guidelines for Canadian Drinking Water Quality*.

Radiation Protection

77. The Commission enquired about how the mining industry managed dosimetry with respect to naturally occurring radioactive materials (NORM) such as radium-226. CNSC staff responded that non-uranium mines were regulated by the individual provinces and had provisions in place to manage the presence of NORM. CNSC staff further noted that the concentrations of NORM in these mines were low and had not triggered the need for dosimetry.
78. The Commission enquired about whether dosimetry was utilized in non-uranium mines to monitor radon exposure. CNSC staff provided the Commission with information about how radon exposure to workers in the mining sector was tracked and managed. CNSC staff also noted that, to date, assessments had shown that workplace monitoring of radon levels was sufficient and that radon concentrations in mines had greatly decreased due to improved ventilation.
79. The Commission asked about how often group dosimetry was used to determine worker dose estimates. The AREVA representative responded that AREVA used a risk-based strategy to determine the dosimetry method used and that group dosimetry was only used for workers that received the lowest doses. CNSC confirmed this information.

Status Update on the Decommissioned Beaverlodge Mine and Mill Site

80. With reference to CMD 15-M41 and CMD 15-M41.A, CNSC staff presented the Commission with an update on the remediation work being conducted by Cameco at the decommissioned Beaverlodge Mine and Mill site in preparation for the transfer of all Beaverlodge properties into the Province of Saskatchewan's Institutional Control Program (ICP). CNSC staff reported that Cameco planned to request the transfer of 15 out of 65 properties into the ICP in 2015 and that, based on CNSC staff's monitoring and inspection activities, it was of the opinion that Cameco's remediation of the Beaverlodge site was satisfactory and continued to follow the proposed ICP transfer timeline, scheduled to be completed in 2023.
81. The Commission expressed its satisfaction with the progress of remedial work at the Beaverlodge Mine and Mill site and provided

several suggestions for future CNSC staff updates to the Commission on this project.

Comments by Cameco Representative

82. The Cameco representative provided the Commission with a detailed update on the activities that Cameco had conducted at the Beaverlodge site since Cameco's last update in 2014, highlighting that a third-party analysis of the 2014 gamma survey showed that the radiological risk posed by the decommissioned properties was as low as reasonably achievable and that no additional remediation measures were needed to meet the site public dose limit objectives.

General Questions

83. The Commission asked about Cameco's level of certainty that all of the crown pillars at the Beaverlodge site had been identified. The Cameco representative provided the Commission with details on the process that Cameco had followed to confirm that all crown pillars had been identified and noted that, with the exception of the Lower Ace Creek crown pillar, all crown pillars were found to be at a low risk for failure. The Cameco representative also stated that selected remedial option plans for the Lower Ace Creek crown pillar subsidence had been identified and that the risk to the public in that area remained low.
84. The Commission requested additional information on the progress of the Bolger/Verna Stream reconstruction project, on improvements to water quality in Verna Lake and on the risk presented by the waste rock through which the stream had been flowing. The Cameco representative provided the Commission with details about the reconstruction project and stated that, although the residual risk of contamination from the waste rock was considered low, assessments showed that water flowing through the waste rock could impact water quality in Verna Lake. The Cameco representative noted that modeling had identified eventual localized water quality improvements in Verna Lake after the stream had been redirected and that water quality in Verna Lake continued to be monitored since it was a performance indicator for the transfer into the ICP.
85. The Commission requested additional information about the boreholes on the Beaverlodge site. The Cameco representative responded that the boreholes identified prior to 2015 had all been sealed and that monitoring showed that this remedial activity was successful with localized water quality improvement downstream from previously flowing boreholes. The Cameco representative also stated that, although the boreholes identified in 2015 had not yet been sealed due to their remote locations, Cameco was

- assessing options to seal those boreholes in a safe and effective manner.
86. The Commission asked about whether any buildings remained on the Beaverlodge site and about the level of residual contamination at the site. The Cameco representative responded that, at the time of decommissioning, the buildings on the site were demolished and placed into the waste rock pile, leaving the sites physically safe, stable and presenting a low radiological risk. The Cameco representative also stated that recent surveys showed that the decommissioned properties complied with public dose criteria.
87. The Commission enquired about whether the monitoring of animal populations was conducted at the Beaverlodge site. CNSC staff confirmed that environmental monitoring at the site included the monitoring of animal populations with a regulatory focus on the aquatic environment, where the most significant impacts had been observed.
88. The Commission noted that the Beaverlodge site appeared to undergo significant natural recovery after being decommissioned and enquired about whether the current remedial work would increase its rate of recovery. The Cameco representative responded that pre-remediation modeling showed that, while the remedial options did not have a significant effect on accelerating natural recovery, Cameco was focusing on site-specific actions that were expected to have localized benefits.
89. The Commission requested information on other uranium mine and mill sites that were currently being remediated and whether operational experience was shared between site operators. CNSC staff presented information about several sites that were currently undergoing decommissioning or remediation and noted that the sites had site-specific performance objectives. CNSC staff also explained that lessons learned and operational experience were shared between site operators, as well as between CNSC staff. The Commission suggested that future annual updates on remediation and decommissioning projects be combined into a single report. CNSC staff stated that it would combine these updates in future reports to the Commission.
90. The Commission enquired about Aboriginal and community consultation activities conducted by Cameco and CNSC staff. CNSC staff presented details about consultation activities that it had conducted with the residents of Uranium City and the Northern Saskatchewan Environmental Quality Committee and stated that, in general, the community supported the project. The Cameco representative noted that Cameco frequently employed local contractors for environmental monitoring and on-site projects, and

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provided information regarding its public consultation activities.

91. The Commission enquired about whether Cameco had sufficient funds to complete the Beaverlodge project, and whether the project was proceeding on budget and on time. The Cameco representative responded that sufficient funds were available to complete the project, which was proceeding as planned.

The Province of Saskatchewan's Institutional Control Program

92. The Commission requested details on the outstanding work at the Beaverlodge site prior to the expected transfer of the remaining Beaverlodge properties into the ICP. Cameco provided information on outstanding work and noted that environmental monitoring to ensure that the properties were meeting established performance indicators was the primary activity presently being conducted at the Beaverlodge site.
93. The Commission asked about safety, security, monitoring and maintenance considerations for properties prior to their transfer into the ICP. CNSC staff responded that, prior to CNSC staff recommending that a property be exempt from CNSC licensing and transferred into the ICP, all radiological, conventional and environmental risks were evaluated to confirm that all requirements for exemption from CNSC licensing were met. The Cameco representative responded that Cameco would submit a request to transfer a property into the ICP only when the property was determined to be safe, secure and stable.
94. The Commission requested additional information about the ICP transfer process and the Province of Saskatchewan's experience with the ICP. The Saskatchewan Ministry of Economy representative provided information about the ICP transfer process and timelines, and stated that, for the Beaverlodge properties, the transfer process had thus far been a successful collaboration between Cameco and multiple government agencies. The Saskatchewan Ministry of Economy representative also stated that the ICP appeared to be working as expected and that this would be confirmed through an ICP performance review, scheduled to be conducted in the near future by its primary stakeholders.
95. The Commission enquired about the funding for the maintenance and monitoring, as well as the remediation of unforeseen events, for the properties in the ICP. The Saskatchewan Ministry of Economy representative provided the Commission with information about the Monitoring and Maintenance Fund that was established for every property in the ICP, as well as about the Unforeseen Events Fund, a global fund that could be used in the case of a major failure at any site in the ICP.

96. The Commission further enquired about how often the Monitoring and Maintenance Funds and the Unforeseen Events Fund had been used. The Saskatchewan Ministry of Economy representative responded that, to date, the Monitoring and Maintenance Funds had been used to conduct regularly-scheduled inspections and monitoring at several properties in the ICP and that the Unforeseen Events Fund had not been used.

Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014

97. With reference to CMD 15-M27 and CMD 15-M27.A, CNSC staff presented the “*Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014*” (Nuclear Substances Report) to the Commission. This report summarizes the safety performance of approximately 1,700 licensees, holding 2,415 licences, that are authorized by the CNSC for the use of nuclear substances and prescribed equipment in the medical, industrial, academic and research, and commercial sectors, as well as for the operation of two high-energy research particle accelerator facilities. CNSC staff reported that, through inspections, reviews and assessments, it was of the opinion that the use of nuclear substances in Canada remained safe.
98. The Commission congratulated CNSC staff on the successful preparation of the Nuclear Substances Report. The Commission stated that it appreciated the inclusion of the suggestions that the Commission had made during the presentation of the 2013 Nuclear Substances Report and noted that the forecasting of 2015 regulatory activities was a good addition to the Report. The Commission also noted several minor improvements and suggestions for the next report.

Interventions – Written and Oral Submissions

99. With reference to CMD 15-M27.1A, the Canadian Radiation Protection Association (CRPA) representative provided details about the CRPA, how the CRPA interacted with the CNSC and with industry, and provided feedback on the Nuclear Substances Report. The CRPA representative also emphasized the importance of a collaborative relationship between the CRPA and the CNSC, and commended the CNSC on its engagement with stakeholders.
100. The Commission asked about how the CRPA helped its members with the development of radiation safety programs and about the CRPA’s training activities. The CRPA representative provided the Commission with information on the CRPA’s annual conference and associated training sessions, as well as the training programs

that the CRPA planned to implement.

101. With reference to CMD 15-M27.2A, the Canadian Organization of Medical Physicists (COMP) representative provided information about COMP, stated that COMP was appreciative of the collaboration between its organization and the CNSC, and provided feedback about the Nuclear Substances Report. The COMP representative stated that COMP intended to engage more frequently with the CNSC in the future.
102. In response to COMP's submission, the Commission asked about its assertion that, in some situations, a conflict could potentially arise between patient care and CNSC regulations. The COMP representative presented the Commission with a scenario to illustrate this point and noted that, with respect to patient care, CNSC regulations were at times too restrictive. The COMP representative recognized the willingness of CNSC staff to work with licensees to ensure safety while minimizing barriers for licensees in meeting their mandates. CNSC staff explained how it managed abnormal situations and how new technologies were integrated into facility operations, while meeting the requirements of CNSC regulations and maintaining a high level of patient care. The Commission noted that the CNSC could not authorize activities that were unsafe or contrary to CNSC regulations.
103. In consideration of a written submission from the Association québécoise des médecins cliniciens, the Commission enquired about the differences between the terminology used in inspection reports and the terminology used in the Nuclear Substances Report. CNSC staff responded that the terminology used in inspection reports was based on the terminology used by the CNSC prior to the adoption of the SCA framework and that, for the Nuclear Substances Report, CNSC staff used the modernized SCA framework terminology. CNSC staff also stated that it would add an appendix to the Report to facilitate cross-referencing between the terminologies.
104. The Commission indicated its appreciation for the interventions that were submitted. The Commission encourages industry associations to continue their participation in CNSC consultation activities, as well as at public Commission proceedings.

General Questions

105. The Commission requested information on how CNSC staff chose the three SCAs against which it reported – operating performance, radiation protection and security – and questioned whether reporting on only those three SCAs provided sufficient regulatory oversight. CNSC staff noted that those three SCAS

- were representative of performance trends and overall industry performance. CNSC staff also stated that, during inspections and licensing activities, CNSC staff evaluated all SCAs applicable to the licensed activity or facility.
106. The Commission enquired about CNSC staff's level of satisfaction with the 2014 performance of the licensees. CNSC staff responded that it was satisfied with the trends in licensee performance over the previous years and provided additional information about those trends. The Commission further enquired about whether the performance ratings of these licensees could be compared with those of licensees in other sectors, such as NPP licensees. CNSC staff explained why a meaningful comparison of these ratings could not be currently conducted but stated that it would evaluate the data and determine if there were ratings that could be meaningfully compared.
107. In regards to TRIUMF Accelerators Inc.'s (TRIUMF) 2014 performance ratings, the Commission enquired about how TRIUMF could improve its two "Below Expectations" ratings. CNSC staff confirmed that those ratings were primarily attributable to the ARIEL project near-miss event that occurred in September 2014 and described the extensive corrective actions that were taken by TRIUMF. CNSC staff also stated that it was satisfied with the corrective actions taken following the event and that, at this time, TRIUMF's ratings were "Satisfactory". The TRIUMF representative provided additional information about the corrective actions that were taken following the near-miss event.
108. The Commission requested clarification on how CNSC inspection ratings were calculated and how they correlated to licensee performance ratings. CNSC staff responded that relative weighting factors, primarily based on safety significance, were assigned to inspection findings and provided a detailed explanation on how these findings were aggregated into an overall inspection rating. CNSC staff stated that licensee performance ratings also considered any events that had occurred at a facility throughout the licence period and that a "Below Expectations" rating indicated a local or systemic failure of one or more elements in an SCA. The Commission requested that, to improve transparency of the CNSC's performance rating system, CNSC staff prepare an information sheet for publication on the CNSC's website detailing how the performance rating of a facility was determined.
109. In response to a written submission, the Commission further enquired about whether inspection results for a licensee who held multiple licences were combined into a single, overall result. CNSC staff responded that separate inspections were conducted for each licence held by a licensee and that the inspection results were

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not combined into an overall result.

110. The Commission enquired about why LTIs were not reported to the CNSC by the licensees considered in the Nuclear Substances Report. CNSC staff responded that reporting requirements, provided for in the *General Nuclear Safety and Control Regulations*¹⁰ (GNSCR), did not require the reporting of LTIs by these licensees and noted that the majority of the licensees were, in this regard, regulated under provincial jurisdiction. CNSC staff further stated that, during inspections, CNSC inspectors evaluated the overall performance of facilities and reviewed many safety indicators, including LTIs. CNSC staff also noted that the Canadian Light Source Inc. (CLS) and TRIUMF Class IB facilities reported LTIs to the CNSC.
111. The Commission requested more information about public consultation activities that were conducted for the Nuclear Substances Report. CNSC staff responded that, for the first time, the Report was issued for comment and feedback by industry and other interested members of the public. CNSC staff also stated that it was satisfied with industry engagement, as demonstrated by the comments received from these stakeholders on the Nuclear Substances Report. The Commission further noted that it had expected the industrial radiography industry to participate in the public consultation on this Report. CNSC staff responded that, during the fall of 2015, it was conducting annual meetings with the radiography industry stakeholders in both Eastern and Western Canada and that these meetings included discussions of the Nuclear Substances Report.

Licensing

112. The Commission enquired about the administrative burden imposed on licensees that held multiple licences. CNSC staff responded that the CNSC had recently made efforts to minimize the administrative burden on licensees by issuing consolidated licences to facilities with multiple use types. The COMP representative stated that the consolidation of licences, as well as electronic reporting, had significantly reduced licensee administrative burden.
113. The CRPA representative stated that some facilities still had up to 10 licences and the Commission enquired about why the licences for these facilities had not been consolidated. CNSC staff responded that a separation in the licensing of certain activities remained due to the more restrictive nature of those activities. The Commission suggested that, if a licensee requested a consolidated

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¹⁰ SOR-2000-202.

licence that included more restrictive licence conditions, CNSC staff should consider the request. CNSC staff agreed that it would evaluate how the CNSC could accommodate further licence consolidation requests. The Commission also requested that the 2015 Report include information showing the number and types of licences held by licensees and the number of NEWs and non-NEWs in each sector.

114. The Commission enquired about changes to the licensing structure at TRIUMF and CLS with the start of radioisotope production and distribution activities. CNSC staff responded that TRIUMF currently held a licence for the production of radioisotopes and had a distribution arrangement with Nordion. The TRIUMF representative confirmed this information and noted that Nordion held a CNSC licence for radioisotope processing at the TRIUMF site. The CLS representative responded that CLS had separate licences for its two operations. CNSC staff noted that, at this time, CLS was not producing and distributing radioisotopes commercially; however, CLS's licensing model would be re-evaluated when CLS began conducting these activities.

Reportable Events and Regulatory Oversight

115. The Commission discussed the applicability of the International Nuclear Events Scale (INES) to the reportable events discussed in the Nuclear Substances Report. CNSC staff responded that INES was developed by the International Atomic Energy Agency (IAEA) as a tool to communicate the safety significance of radiological events to the public. CNSC staff explained that, as a member of the international community, the CNSC had committed to using the INES Scale to report on these types of radiological events to the IAEA; however, improvement on CNSC reporting for these events while adhering to its international commitments could be evaluated. CNSC staff also advised the Commission that the CNSC's regulatory response to events took into account a much broader range of factors than those considered by INES and that, as indicated by several intervenors, operational experience should be considered from all types of events, including near-misses and INES Level 0 events.
116. The Commission requested additional information in regards to the CRPA's submission, which raised concerns about the appropriateness and fairness of the AMPs issued in 2014. CNSC staff provided details about its process for the determination of appropriate enforcement action and noted that the *Administrative Monetary Penalty Regulations*¹¹ (AMPs Regulations) included determining factors for the administration and classification of

¹¹ SOR-2013-139.

AMPs, as well as corresponding penalties. The CRPA representative stated that increased transparency in applying criteria for and the administration of AMPs was required. CNSC staff responded that the AMPs Regulations included a comprehensive and transparent Commission review process.

117. In reference to the CRPA's intervention, the Commission asked about how the CNSC's enforcement actions could overshadow regulatory compliance. The CRPA representative responded that licensees had expressed a concern with respect to the voluntary reporting of events that did not strictly fall under section 29 of the GNSCR due to concerns of being issued an AMP and that operational experience from these events could be lost. The COMP representative stated that COMP's members had expressed a concern with respect to consistency in the application of CNSC regulations and requirements amongst CNSC staff. CNSC staff responded that the CNSC was conscious of this concern when considering appropriate enforcement actions and that, through industry outreach activities, CNSC staff encouraged voluntary reporting and the sharing of operational experience by means of less adversarial methods.

Radiation Protection

118. The Commission enquired about why several NEWs in the industrial sector had annual doses of 20-50 mSv/year and whether such elevated doses were typical of that industry. CNSC staff responded that industrial radiography had been identified as a high-risk industry with higher-than-average doses due to work involving high-activity sources. CNSC staff further stated that a higher level of regulatory oversight was applied to the industrial radiography sector to ensure that doses were maintained ALARA.
119. The Commission requested more information on personnel contamination incidents. CNSC staff provided information on these incidents and explained the measures taken by the CNSC and licensees to prevent them, noting that they did not occur frequently because the majority of CNSC licensees used sealed sources and the CNSC had rigorous unsealed source handling requirements.
120. The Commission requested information on the progress being made with respect to the safety procedures in the event of the death of brachytherapy patients. CNSC staff responded that initial guidelines surrounding deceased brachytherapy patients had been drafted, preliminary feedback from stakeholders had been received, and CNSC staff planned to develop a discussion paper on this topic. The COMP representative stated that COMP was committed to working with the CNSC in finding an acceptable solution to address regulatory and industry concerns surrounding this issue.

121. The Commission enquired about standardized radiation safety officer (RSO) training and certification requirements. CNSC staff responded that RSOs had to be reviewed by the CNSC and that RSOs for Class II facilities had to meet the requirements of CNSC REGDOC-2.2.3, *Personnel Certification: Radiation Safety Officers*¹² to be certified by the CNSC. CNSC staff also noted that RSOs for the majority of licensees were required to complete an RSO training course and that CNSC staff balanced training and certification requirements against the relative risks of the activities being undertaken, making standardized requirements less practical. The CRPA representative stated that the CRPA was of the opinion that increased standardization of requirements for RSOs was required. CNSC staff noted that, although the current provisions for the validation of RSO qualifications had shown to be adequate, it had established a working group with the CRPA to determine a way forward for the standardization of RSO certification requirements. The Commission indicated its satisfaction with the establishment of this working group.
122. The Commission requested additional information about formal certification and training requirements for RSOs in the medical sector. CNSC staff responded that the CNSC's certification program for Class II RSOs provided for detailed RSO qualifications. The COMP representative stated that many RSOs in hospital settings were members of COMP or an equivalent professional organization.
123. The Commission enquired about how an RSO was identified in a licence and how CNSC staff ensured that applicant authorities were aware of their responsibilities. CNSC staff described the application process as it related to the designation of RSOs and the applicant authority's responsibilities. CNSC staff further explained how the application process had changed in the last few years, ensuring greater involvement of the applicant authority. The Commission suggested that licence applications include a section with a clear explanation of licensee responsibilities and CNSC expectations.
124. The Commission asked how CNSC staff ensured that an RSO could report directly to its applicant authority. CNSC staff explained the responsibilities of the applicant authority and stated that, during the licensing process, CNSC staff evaluated the applicant's management and reporting structure. Furthermore, CNSC staff stated that an important component of Type 1 inspections was a formal interview with a facility's staff and management to ensure a healthy reporting structure. The COMP

¹² CNSC regulatory document REGDOC-2.2.3, *Personnel Certification: Radiation Safety Officers*, 2014.

representative stated that the interviews conducted by CNSC staff during Type 1 inspections were valuable.

125. The Commission stated that it fully expects CNSC staff to be proactive in raising any deficiencies in licensee reporting structures. The Commission also stated that it expects licensees to evaluate their own governance models on a regular basis.

Update on the Distribution of Potassium Iodide (KI) Tablets for Ontario

126. With reference to CMD 15-M43 and CMD 15-M43.A, CNSC staff presented a second update on the distribution of potassium iodide (KI) tablets to all residences, institutions and businesses in NGS Primary Zones, as well as the pre-stocking of KI tablets in strategic locations for residents of the Secondary Zones. CNSC staff reported that all major nuclear licensees in Canada were expected to meet the requirements for KI pre-distribution and pre-stocking by December 2015, as detailed in each licensee's Licence Conditions Handbook (LCH) and in CNSC REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*.¹³

Comments by Licensee and Provincial Representatives

127. With reference to CMD 15-M43.1, the OPG representative provided details of the status of its KI public information campaign, which was completed at the end of September 2015, and stated that all homes and businesses in the Primary Zone would receive KI tablets by mid-October 2015.
128. With reference to CMD 15-M43.2, the representatives from the Ontario Office of the Fire Marshal & Emergency Management (OFMEM) and the Ontario Ministry of Health and Long-Term Care (MOHLTC) presented a quarterly update on the KI distribution initiative in Ontario and noted that this initiative had been a harmonious collaboration of all Ontario stakeholders.
129. The Bruce Power representative stated that Bruce Power had completed the KI pre-distribution and pre-stocking as specified in its LCH and REGDOC-2.10.1. The Bruce Power representative added that Bruce Power was working on additional nuclear emergency preparedness good-practice activities with local communities.

General Questions

130. The Commission noted that a significant outreach effort was

¹³ CNSC regulatory document REGDOC-2.10.1, *Nuclear Emergency Preparedness and Response*, 2014.

- conducted by licensees and provincial representatives prior to KI distribution and enquired about whether additional benefits of this outreach were observed. The Bruce Power representative responded that its outreach efforts allowed Bruce Power to provide local communities with additional information about nuclear power. The OPG representative stated that focus group attendees had very good recall of OPG's previous public information initiative and that OPG expected the recall of this initiative would be similar, but added that follow-up polling would provide a better indication of its effectiveness.
131. The Commission enquired about planned long-term follow-up and monitoring programs after KI distribution was completed. The OFMEM representative responded that the province would continue with its public education programs in regards to KI, likely on an annual basis to coincide with the licensees' follow-up efforts. The OPG representative responded that OPG would use public polling to monitor KI awareness and that OPG was also developing a KI follow-up communication program. The Bruce Power representative responded that Bruce Power would add KI information to its annual emergency preparedness information sessions and mail-outs, and that Bruce Power would continue to interact with the community during regular community meetings.
132. The Commission asked whether international KI distribution and follow-up monitoring strategies had been examined. CNSC staff provided details about the international KI distribution benchmarking that had been conducted and noted that strategies varied significantly between countries. CNSC staff also stated that all of the countries that were examined had robust follow-up monitoring programs.
133. The Commission asked about where KI would be pre-stocked in the Secondary Zones. The OFMEM representative provided the Commission with information on the current status of the Secondary Zone pre-stocking strategy and noted that, while at this time only Bruce Power had determined its pre-stocking locations, significant progress had been made in this regard by the other major nuclear licensees and by the province.
134. The Commission enquired about how the sensitive population in the Secondary Zones would be tracked to ensure that adequate amounts of KI were pre-stocked at all times. The OFMEM representative responded that the province recognized that the sensitive population changed annually and that the KI pre-stocked in Ontario greatly exceeded the requirement. The Commission further enquired about whether distributing KI tablets to women at prenatal visits had been considered. The OFMEM representative responded that the province would evaluate potential

- improvements to KI availability in the Secondary Zones after pre-distribution in all Primary Zones had been completed.
135. The Commission asked whether there were any medical conditions that would contraindicate the administration of KI. The MOHLTC representative provided examples of such medical conditions, and noted that these conditions were rare and that they were listed in the KI information booklet. The MOHLTC representative also explained that, during the pre-distribution campaign, this information was provided to the public and that the public was encouraged to consult their physician for additional information.
136. The Commission asked whether the population near the Gentilly-2 NGS had been advised that KI tablets were no longer needed since the NGS was in a safe storage state. CNSC staff confirmed that Hydro-Québec had advised provincial authorities that Gentilly-2 NGS was in a safe storage state and that the KI tablets in that area were no longer needed.
137. The OPG representative noted in CMD 15-M43.1 that, during pre-distribution information sessions, OPG was frequently asked why KI tablets were now being pre-distributed if there was no increased risk for NGS. The Commission enquired about how OPG answered the public's questions on this matter since KI had always been available and that this initiative was primarily related to improved KI distribution. The OPG representative explained that the public readily understood the concept of higher safety standards and that the KI pre-distribution initiative was compared to wearing bicycle helmets, a concept the public readily understood and accepted.
138. The Commission noted that OPG's KI information booklet was in English and enquired about whether it would be available in other languages. The OPG representative responded that the information booklet was currently only available in English and that, although no requests for additional languages had been received, OPG was evaluating the need to issue the information booklet in other languages. The OFMEM representative added that all information issued by the province was available in both official languages, including KI information. The Commission further enquired about how a member of the public could obtain clarification on the information in the booklet. The OPG representative explained the various means by which a member of the public could obtain additional information about KI and nuclear emergency preparedness.
139. The Commission enquired about how CNL was addressing KI pre-distribution and pre-stocking for Quebec residents across the

river from its Chalk River, Ontario facility. The CNL representative responded that CNL was working with the Quebec municipalities in the Primary and Secondary Zones to ensure that KI would be made available to its residents. The CNL representative also noted that its KI information booklets included information provided by the Province of Ontario, as well as the information that had been developed for the Gently-2 NGS, and that these booklets would be available in both official languages.

140. The Commission enquired about KI pre-distribution and follow-up monitoring at the Point Lepreau NGS. CNSC staff responded that Point Lepreau had an established KI program, was compliant with REGDOC-2.10.1 and that Point Lepreau maintained an effective annual KI follow-up program.

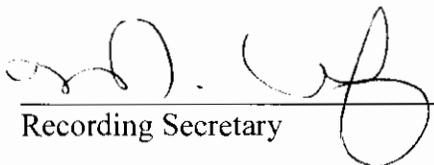
141. The Commission congratulated CNSC staff, licensees and provincial representatives on their progress and collaboration with respect to the KI pre-distribution initiative.

Closure of the Public Meeting

142. The meeting closed at 4:30 p.m. on October 1, 2015.


Recording Secretary

24-12-2015
Date


Recording Secretary

Dec 24, 2015
Date


Secretary

24-12-2015
Date

APPENDIX A

15-M37	August 31, 2015	e-Docs 4825937
Notice of Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on Wednesday, September 30 and Thursday, October 1, 2015 in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa Ontario		
15-M38	September 16, 2015	e-Docs 4836322
Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on Wednesday, September 30 and Thursday, October 1, 2015 in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa Ontario		
15-M38.A	September 24, 2015	e-Docs 4849938
Updated Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on Wednesday, September 30 and Thursday, October 1, 2015 in the Public Hearing Room, 14 th floor, 280 Slater Street, Ottawa Ontario		
15-M40	September 29, 2015	e-Docs 4851798
Approval of Minutes of Commission Meeting held on August 20, 2015		
15-M42	September 28, 2015	e-Docs 4851280
Status Report on Power Reactors as of September 28, 2015		
15-M39	August 10, 2015	e-Docs 4794232
Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014 – Submission from CNSC Staff		
15-M39.A	September 30, 2015	e-Docs 4824109
Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014 – Presentation by CNSC Staff		
15-M39.1	August 31, 2015	e-Docs 4828420
Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014 – Written Submission from Carolyn Johnson		
15-M39.2	August 31, 2015	e-Docs 4828420
Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2014 – Written Submission from the Canadian Nuclear Workers' Council		
15-M35	August 11, 2015	e-Docs 4781834
Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2014 – Submission from CNSC Staff		
15-M35.A	August 11, 2015	e-Docs 4781834
Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2014 – Presentation by CNSC Staff		

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15-M35.1	August 28, 2015	e-Docs 4828250
Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2014 – Written submission from Carolyn Johnson		
15-M35.2	August 31, 2015	e-Docs 4828414
Regulatory Oversight Report for Uranium Mines and Mills in Canada: 2014 – Written submission from the Canadian Nuclear Workers' Council		
15-M41	September 15, 2015	e-Docs 4813069
Status Update on the Decommissioned Beaverlodge Mine and Mill Site – Submission by CNSC Staff		
15-M41.A	September 23, 2015	e-Docs 4833516
Status Update on the Decommissioned Beaverlodge Mine and Mill Site – Presentation by CNSC Staff		
15-M27	July 31, 2015	e-Docs 4657244
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Submission from CNSC Staff		
15-M27.A	October 1, 2015	e-Docs 4847108
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Presentation by CNSC Staff		
15-M27.1	August 29, 2015	e-Docs 4828359
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Submission from the Canadian Radiation Protection Association		
15-M27.1A	September 23, 2015	e-Docs 4848630
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Presentation by the Canadian Radiation Protection Association		
15-M27.2	August 31, 2015	e-Docs 4828748
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Submission from the Canadian Organization of Medical Physicists		
15-M27.2A	September 23, 2015	e-Docs 4848628
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Presentation by the Canadian Organization of Medical Physicists		
15-M27.3	August 30, 2015	e-Docs 4828795
Annual Regulatory Oversight Report on the Use of Nuclear Substances in Canada: 2014 – Submission from the Association Québécoise des médecins cliniciens		
15-M43	September 15, 2015	e-Docs 4828517
Update on the distribution of potassium iodine (KI) tablets for Ontario – Submission from CNSC Staff		

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15-M43.A October 1, 2015 e-Docs 4849149
Update on the distribution of potassium iodine (KI) tablets for Ontario – Presentation from CNSC Staff

15-M43.1 September 21, 2015 e-Docs 4848056
Update on the distribution of potassium iodine (KI) tablets for Ontario – Submission from Ontario Power Generation

15-M43.2 September 23, 2015 e-Docs 4849421
Update on the distribution of potassium iodine (KI) tablets for Ontario – Presentation by the Office of the Fire Marshal & Emergency Management and the Ministry of Health & Long-Term Care