Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held on August 17-18, 2016

Canada

August 17 and 18, 2016

Minutes of the Canadian Nuclear Safety Commission (CNSC) meeting held Wednesday, August 17, 2016, beginning at 1:00 PM and Thursday, August 18, 2016, beginning at 9:00 AM, at the Public Hearing Room, 14th Floor, 280 Slater Street, Ottawa, Ontario.

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

M. Leblanc, Commission Secretary
L. Thiele, Senior General Counsel
S. Dimitrijevic, M. Hornof, P. McNelles, Recording Secretaries

CNSC staff advisors were: R. Jammal, T. Jamieson, D. Newland, G. Frappier, B. Poulet, K. Lafrenière, J. LeClair, N. Tran, B. Carroll, M. Rinker, M. McKee, B. Lojk, D. Miller, V. Tavasoli, J. Jin, P. Elder, Y. Akl, J. Karouni, M. El-Hawary, C. Morin, A. McLay, S. Yalaoui, R. Cawthorn, M. Santini, H. Khouaja, K. Heppell-Masys, L. Sigouin, B. Howden , M. Rickard, Y.C. Liu, C. Purvis, A. Du Sautoy, R. Kameswaran, M. Beaudette, Y. Poirier, P. Lahaie, A. Bouchard, D. Ndomba, K. Noble, K. Murthy, H. Rabski

Other contributors were:

- Bruce Power: F. Saunders, K. Kelly, L. Clewett, G. Newman, J. Scongack
- New Brunswick Power: R. Gauthier, M. Hare, D. Taylor, C. Hickman
- Ontario Power Generation: R. Manley, S. Gregoris, F. Grant, B. McGee, C. Lorencez, S. Burns, S. Woods
- CNL: B. Pilkington, S. Cotnam, N. Mantifel
- Environment and Climate Change Canada: N. Ali
- Hydro-Québec : D. Olivier
- Office of the Fire Marshal and Emergency Management: D. Nodwell
- Durham Region: Mr. Leonard, K. Bulloch,
- Health Canada: D. Nsengiyumva, D. Quayle
- Greenpeace: S.P. Stensil
- Emergency Management (OFMEM): A. Suleman
- Cameco: L. Mooney

Constitution

1. With the notice of meeting CMD 16-M38 having been properly given and all permanent Commission members being present, the meeting was declared to be properly constituted.

2. Since the meeting of the Commission held June 22 and June 23, 2016, Commission member documents CMD 16-M30, CMD 16-M31, CMD 16-M34, CMD 16-M35, CMD 16-M38 to CMD 16-M42, CMD 16M-45 and CMD 16-M46 were distributed to members. These documents are further detailed in Appendix A of these minutes.

Adoption of the Agenda

3. The revised agenda, CMD 16-M39.B, was adopted as presented.

Chair and Secretary

4. The President chaired the meeting of the Commission, assisted by M. Leblanc, and P. McNelles, M. Hornof, S. Dimitrijevic, and S. Gingras, Recording Secretaries.

Minutes of the CNSC Meeting Held June 22 and June 23, 2016

5. The Commission members approved the minutes of June 22 and June 23, 2016 Commission meeting as presented in CMD 16-M40.

STATUS REPORTS

Status Report on Power Reactors

6. With reference to CMD 16-M41, the Status Report on Power Reactors, CNSC staff presented to the Commission information on the status of nuclear power reactors at Canadian Nuclear Generating Stations (NGS). CNSC staff provided the following corrected information:

   - Pickering Unit 4 was running at 94% of Full Power (FP), and was expected to reach 100% of FP in the coming days
   - The date of the lubricating oil leak at the Pickering NGS was corrected to August 1, 2016

   Bruce Power

7. The Commission enquired about what constituted “Minor Heat Transport Leakage” at Bruce Power Unit 4. The Bruce Power

representative responded that they monitor for heavy water leaks, and explained the reasons for this leakage. Unit 4 was manually shut down to repair the leaky joints. Bruce Power further stated that they considered this repair to be “minor” as there was no piping failure, and it is an expected, well-practised repair job. CNSC staff commented that the term “minor” was used as the leak did not constitute a safety or regulatory issue. The Commission commented that the term “minor” might not be appropriate for this form of repair work, and suggested that a greater description of the repair work should be included in the status report.

8. The Commission asked what the trigger for the manual shutdown was. The Bruce Power representative responded that this was a planned outage, and the trigger for the shutdown was the monitoring of the leak rate. There was no automatic reactor trip.

9. The Commission further asked if such a leak would trigger the CNSC to require Bruce Power to act on this issue. CNSC staff responded that they were aware of the leak, as they are monitoring the leak rate themselves. The repair was therefore anticipated. The Bruce Power representative confirmed that the leak rate was included in their daily reports, of which CNSC staff receives copies.

10. The Commission asked Bruce Power to explain how it ensures that past experiences and lessons learned for infrequent events do not get lost with changes of personnel and/or procedures. The Bruce Power representative responded that this has occurred in the past, and was one of the causes of a previous worker injury, for which the Commission was previously briefed. Changes have been made to the maintenance procedure, to include OPEX information. The Bruce Power representative stated that this maintenance work used to be performed by contractors, so Bruce Power did not have the procedure, which has now been corrected. An additional corrective action was to tie all safety bulletins from manufacturers into the OPEX.

Darlington

11. The Commission enquired into the causes of injuries to contractors at the Darlington NGS, and if there are procedures to explain the work and the risks to the contractors. The OPG representative responded that contractors follow all OPG procedures and standards, and that all contract workers and supervisors receive training regarding OPG standards and expectations. Additional oversight is provided by the contract management oversight group to ensure the standards are understood before the work starts and

that they are followed during the work. The Commission also asked for additional details regarding the injuries. The OPG representative stated that in the case of the first contractor injury, the worker was in a congested area, which did not have the best working conditions or best practices, resulting in electrical contact. In the case of the second contractor injury, it occurred while the contractor was working on a new structure that will be used to assist with the Darlington refurbishment project. The contractor received a cut on the arm after brushing against steel that was being used as part of the new structure.

12. The Commission asked a follow-up question regarding the number of contractors at the Darlington site. The OPG representative responded that there are approximately 1500 contractors on site, and approximately the same number of permanent employees.

Pickering

13. The Commission enquired about the source and sampling of the elevated tritium levels reported at the Pickering NGS. CNSC staff responded that the airborne tritium levels were slowly rising in certain areas, but are still far below regulatory limits. In April 2016, OPG provided a report under REGDOC-3.1.1[1] as an event of regulatory interest. CNSC staff stated that these tritium levels do not pose a health or safety issue. CNSC staff also noted that there was an increase in the tritium groundwater levels in some wells close to the site. OPG presented (to CNSC staff) their planned activities to determine the cause of these tritium levels in June 2016. OPG will provide further updates to CNSC staff as its investigation progresses. The OPG representative further stated that they have implemented enhanced monitoring of the groundwater, and have engaged third-party assistance. The OPG representative stated that OPG does not foresee any environmental impact, and states that tritium releases from the Pickering NGS are fewer than 1% of the regulatory limits.

14. The Commission enquired on the difference between the current and normal tritium levels. The OPG representative answered that they found small amounts of tritium in a fuel handling tunnel but have no evidence of a tritium leak from any reactor. Overall, the OPG representative stated that the elevated tritium levels in the groundwater were slightly above background. The OPG representative stated its willingness to supply more detailed information on the tritium levels and location of the tunnel.

[1] Canadian Nuclear Safety Commission Regulatory Document 3.1.1 – *Reporting Requirements for Nuclear Power Plants*, May 2014.

15. The Commission asked about when OPG expects to identify the cause of the elevated tritium levels. The OPG representative responded that this is a complex issue that they have been working through. OPG stated that they would update the CNSC on their progress on this matter, and then determine a date. The Commission was satisfied with the current progress of the investigation into this matter.

16. The Commission enquired about the volume and cause of the hydrazine leak at the Pickering NGS. The OPG representative responded that the volume was approximately 8000 litres of hydrazine, which leaked from a storage tank to a diked containment area. The OPG representative stated there were two contributing factors to the leak; a human performance error that left a valve open, and a mechanical device failure that should have stopped the leak, but failed to do so. The OPG representative added that none of the hydrazine reached the lake, as the hydrazine leak was contained by the containment dyke.

17. The Commission asked if notification of the leak was made to the Ontario Ministry of Environment and Climate Change (MOECC), and the OPG representative stated that it was not, since the leak was contained internally and there was no release to the environment, it did not meet spill reporting criteria, and as such was not reported to the MOECC.

18. The Commission then asked if the leaked hydrazine was recovered. The OPG representative responded that they have a third party they bring in for events of this nature. That third party recovered the hydrazine and cleaned up the leak.

19. The Commission asked for more details about the event. OPG responded that the leak was discovered via normal operator rounds during plant inspections. The OPG representative stated that health issues can result from hydrazine contact. Several people were sent off-site for medical assessment, and returned to the site with no follow-up issues.

20. The Commission enquired about the root cause of the boiler level controller malfunction that caused the shutdown of Unit 4. The OPG representative responded that the cause of the malfunction was a stuck button on the front of the controller, causing the boiler level to increase. The plant and plant crew responded as expected, the plant was shut down, and has since returned to high-power operation. The Commission further asked how the button became stuck. The OPG representative stated that they are going through

their corrective action process to identify the cause of the stuck button and how that issue can be avoided in the future. The OPG representative further stated that the malfunctioning controller has been replaced.

Overall Status Report

21. The Commission commented that several of the events in the status report were described in very general terms, and did not include specific details. In future status reports, the Commission would appreciate more details on technical issues, including photos or schematics where appropriate.

Canadian Nuclear Laboratories (CNL) Limited: Status Report on Fitness for Service for the Chalk River Laboratories

22. With reference to CMD 16-M42, which includes the Status Report on Fitness for Service for the Chalk River Laboratories, CNSC staff presented to the Commission an update on CNL's progress regarding the fitness for service of Chalk River Laboratories (CRL). In the Record of Decision for the April 6, 2016 Commission hearing[2] to renew the CRL licence, the Commission requested CNSC staff to report on the status of the fitness for service SCA at each Commission meeting, until an overall rating of satisfactory is obtained. CNSC staff reported that the CRL site, except for the National Research Universal (NRU) reactor, has progressed to a satisfactory rating in the fitness for service SCA. However there remains additional work to be performed before the NRU reactor can be rated overall as satisfactory in the fitness for service SCA.

23. The Commission expressed its satisfaction with the report, and commented that it clearly showed the action needed for the NRU to achieve the satisfactory rating and the timeline for CNL to complete those activities.

24. The Commission enquired whether, if the NRU reactor was to run past 2018, the requirements for it to achieve a satisfactory rating would change. CNSC staff stated that the requirements would not change. However, if the NRU were to operate past the expected shutdown date of March 2018, it might require further work to ensure it would meet the fitness for service requirements for that new timeline.

[2]Canadian Nuclear Safety Commission Record of Decision – *Application to Renew and to Amend the Nuclear Research and Test Establishment Operating Licence for Chalk River Laboratories*, April 6, 2016, Canadian Nuclear Laboratories Limited.

25. The Commission further asked if the activities regarding the improvement of the fitness for service SCA would change should the end of life date change. CNSC staff responded that the work performed will ensure the NRU operates to 2018, and operating the NRU past that date may require additional resources. The CNL representative stated that the original NRU improvement plan was developed with respect to two five-year licence intervals. Phase 1 was intended to finish in 2016, with Phase 2 intended to finish in 2021. The program is now shortened as there is insufficient time to complete all Phase 2 activities by the expected March 2018 shutdown date, and implementing modifications so close to the shutdown date was not considered practical.

26. The Commission enquired if the NRU reactor would be as safe on its last day of operation as it was always intended to be. CNSC staff and the CNL representative confirmed that the reactor will continue to be safe throughout the rest of its operation and during its safe shutdown state. The Commission further asked if any improvements to the NRU that are not implemented due to the shutdown date will affect the safety of the reactor. The CNL representative responded that any work not undertaken would be operational improvements only. The CNL representative stated that safety improvements to the NRU will be made right up to the shutdown date, and it is expected to be in good condition at its end of life.

27. The Commission noted that there are seventeen items that must be satisfied for the NRU reactor to achieve the “satisfactory” rating. The Commission then asked over what time period these items were established, and if any new items had been identified. CNSC staff responded that the specific areas were defined when the safety and control areas were established, and this work had been ongoing for several years. CNSC staff stated that this work clarifies the information presented at previous Commission meetings, making it easier to clearly communicate that information to the Commission Therefore, there are no new items, the information in the status report was just presented with more clarity, including details on expectations and target dates.

28. The Commission asked, that from the information provided, the NRU reactor should reach a satisfactory level by May or June 2017, and if so, would the NRU reactor be re-rated as satisfactory. CNSC staff noted that these target dates were proposed by CNL, and CNSC staff has agreed with those dates. CNSC staff will verify the work once it is completed, and if it is completed ahead of schedule CNSC staff will inform the Commission.

29. The Commission enquired about item 6 (*Ensure that critical spare parts are available to support maintenance work*) in the status report. The Commission asked how the identification of the high-priority spare parts was previously done, and how CNSC staff rated this item as being completed, when approximately 70 of the high-priority space parts had not been identified. CNSC staff responded that, while CNL had not competed sourcing all of the replacement parts, they had progressed far and quickly enough that CNSC staff was satisfied with the ability of CNL to complete this item.

30. The Commission commented that they were concerned with the ability of CNL to acquire the spare parts for the remaining 70 components, as CNL was unable to find spares for 215 components over several years. The CNL representative responded that the identification of critical spare parts came out of a systematic approach to identify spares that were not previously stocked, using programs like aging management and system health monitoring. CNL stated that, as part of the 2011 Integrated Implementation Plan (IIP), the components of all NRU reactor systems were identified, and a critical spare parts assessment was started. System experts reviewed their systems to identify the 215 parts in the first two years of the IIP, and the sourcing of replacement parts has occurred over the last three years. Many of these parts are obsolete, and additional time is required to find modern equivalents. The CNL representative added that spare parts are currently on hand for replaced/refurbished equipment.

31. The Commission enquired as to how critical spare parts were identified before the 2011 IIP, and reiterated that they were unconvinced that item 6 should have been rated as complete. The CNL representative stated that, before 2011, a systematic approach was not used to identify critical components, as spare parts identification was based on expert judgment by technical staff. Implementing a systematic approach improved upon the older process. CNSC staff stated that replacing all of the parts was not the key point in satisfying item 6, but rather that CNL has a plan in place, are meeting their commitments, and progressing at an acceptable rate. CNSC staff added that the unavailability of spare parts does not affect the safety of the NRU reactor, as it continues to operate safely.

32. The Commission made several comments regarding several of the items in the status report, stating that more detail should have been provided. The Commission stated that additional figures, numerical

data or qualitative results would better indicate the importance of the work done by CNL, and the work that is remaining. CNSC staff committed to providing more substantial information on certain items, for future status reports.

33. The Commission enquired about the "Structural Integrity" item in the status report, asking for clarification on the issue of reactor vessel corrosion. CNSC staff responded that they are looking to ensure that the vessel will not have a significant failure that will affect safety. CNSC staff added regarding the inspection results that there has been no change in wall thickness, as seen from the measurements from their inspection tools. There were visual changes, in terms of wall colour and surface roughness, which may indicate corrosion; however it is not proceeding at a rate that impacts the integrity of the reactor vessel and does not affect the safe operation of the reactor.

34. The Commission reiterated that it would like to see more qualitative or quantitative data regarding corrosion and vessel integrity in future status reports. The CNL representative stated that there has been a comprehensive inspection process for the vessel since 2011, for which the results will be included in a report to the CNSC in October. The CNL representative also added that the fitness for service program for the reactor vessel was developed to ensure that the reactor vessel would be fit for service until 2021. CNL stated that they are confident with the fitness for service program regarding the reactor vessel, are satisfied with its results.

INFORMATION ITEMS

Update on the Development of Licence Limits for Hazardous Substances: specific emphasis on uranium mines and mills

35. With reference to CMD 16-M35, CNSC staff gave an oral presentation regarding the effluent releases of Uranium (U), Selenium (Se), and Molybdenum (Mo). This presentation is a follow-up to a memorandum on this topic that was provided to the Commission in February 2016. CNSC staff reviewed current practices related to controls on releases and the inclusions of limits within the CNSC licensing framework, as well as the regulatory history associated with uranium, molybdenum and selenium releases. CNSC staff discussed the discussion paper DIS-12-02[3] on the establishment of release limits and action levels for nuclear facilities, and the major national and international regulatory

[3] Canadian Nuclear Safety Commission Discussion Paper DIS-12-02 – *Process for Establishing Release Limits and Action Levels at Nuclear Facilities*, February 2012.

initiatives that may influence the approach of the CNSC with respect to the establishment of release limits for deleterious substances. CNSC staff concluded with a summary of the presentation, and by requesting the closure of two action items.

36. The Commission commended CNSC staff for the excellent presentation and leadership role that was taken by CNSC staff nationally and internationally on this subject.

37. The Commission enquired if the Department of Fisheries and Oceans (DFO) was an active participant in the workshops for developing site-specific exposure-based limits for selenium. The Commission also noted that this is different from the historical regulatory practices, which were always technology-based. The Environment and Climate Change Canada (ECCC) representative stated that DFO was not involved, as the responsibility for the administration of Section 36 of the *Fisheries Act*[4]and deleterious substances falls under the Minister of the Environment and Climate Change Canada. Therefore, the working groups are established by ECCC, and CNSC staff members are included in those working groups.

38. The Commission further asked whether ECCC could decide on the methodology(s) used without consulting DFO. The Commission also asked what the position of DFO was on this matter. The ECCC representative responded that they would be the lead, but would consult with the experts at DFO, who would have important information to contribute towards preparing guidelines and limits for selenium. The ECCC representative added that as the deleterious substance portion of the *Fisheries Act* is the responsibility of ECCC, the ECCC would have working groups reviewing the available information.

39. The Commission enquired about what is expected over the near future, regarding "Best Available Technology" and uranium mining. CNSC staff responded that an example of this is REGDOC-2.9.1[5], which requires that the facility design and treatment technologies for all new facilities will include assessments of existing technologies and adopt the most efficient, most protective technologies. CNSC staff stated that retrofitting existing facilities can be more expensive than putting in the latest technology into a new facility when it is constructed. The goal is to ensure the continuous improvement of technology as new technologies are adopted and new facilities are constructed. CNSC

[4] Fisheries Act (R.S.C., 1985, c. F-14)
[5] Canadian Nuclear Safety Commission Regulatory Document REGDOC-2.9.1, *Environmental Policy, Assessments and Protection Measures* (Draft).

staff also added that changes in release limits could occur, based on revisions to the *Metal Mining Effluent Regulations* (MMER)[6]. These changes in limits would be reflected in the Licence Condition Handbook of licensees.

40. The Commission enquired about if there are multiple technologies available that achieve different results, would CNSC staff be involved in the decision on which technology to use, or would the licensee make their own choice. CNSC staff responded that the "best available technology economically achievable" has the economic factor as a consideration. However, if one of the technologies was better for pollution prevention and was economically achievable, it would be seriously considered and difficult to argue against.

41. The Commission further asked if ECCC would take additional actions regarding molybdenum to manage its risk, other than data collection. CNSC staff stated ECCC would not, as molybdenum releases are not considered enough of a broad problem meriting a national regulation. CNSC staff noted that molybdenum is not covered under the MMER. However, it is still covered under Section 36 of the *Fisheries Act*, under the prohibition on release.

42. The Commission enquired as to who is part of the working group for the CSA standard N288.8[7], which is under development. CNSC staff responded that the CSA has a matrix requirement that the working group must include a broad spectrum of stakeholders from industry, government, and others.

43. The Commission further enquired whether the same stakeholders who provided comments on the discussion paper (DIS-12-02) would be involved with developing the new CSA standard. CNSC staff responded there were many comments/concerns from industry, which will be well-represented, and also from non-governmental organizations and members of the public, who will not be represented in the working group. CNSC staff added there will be a public consultation period for additional comments on the draft standard, and that the CNSC contributes to the CSA to make the standards publicly available.

44. The Commission asked if, after REGDOC-2.9.1 is issued, would ECCC proceed with a ministerial regulation. The ECCC representative responded that currently ECCC does not have the resources to complete the review of the CNSC regulatory regime

[6] Metal Mining Effluent Regulations (SOR/2002-222)
[7] CSA N288.8: Guidelines for establishing and implementing environmental action levels to control emissions from nuclear facilities (draft), CSA Group.

that would need to be performed before proceeding with ministerial regulation. The ECCC representative added that they are re-evaluating their priorities, and may discuss this with CNSC staff later this year. The Commission further asked the ECCC representative to confirm that this was just due to a resourcing issue, and not a policy concern, to which the ECCC representative stated that was correct.

45. The Commission enquired whether the CNSC staff who gave this presentation are world experts in terms of the impact on fish of deleterious substances. CNSC staff responded that they were invited to provide a briefing to the U.S. EPA on selenium, before the development of their (EPA's) final criteria. CNSC staff added they are the leaders within Canada, with the greatest amount of information on selenium/selenium releases coming from a coal mine in B.C. and a uranium mine in Saskatchewan.

46. The Commission asked about the impact of the protective limits on other industries. CNSC staff responded that the regulatory action, resulting research and industry responses resulted in several high-quality publications in the scientific literature, from the University of Saskatchewan Toxicology Centre. Those research papers were important during the Canadian CEPA toxic assessment, and the U.S. EPA toxicity assessment.

47. The Commission noted that this research has been ongoing for several years, and some of the results have been posted publicly on the internet. The Commission enquired why the CNSC staff did not publish more in the scientific literature. CNSC staff responded that they have published before based on themes of research, and the selenium research will be published next. The Commission asked CNSC staff about their plans to publish this work in the future. CNSC staff stated that they will start by uploading this work to the CNSC website, as well as writing abstracts to determine the best place(s) to present this research.

48. The Commission is satisfied with the information provided by CNSC staff on this matter and considers this item closed.

Risk-informed Assessment of CANDU Safety Issues

49. With reference to CMD 16-M34 and CMD 16-M34.A, CNSC staff presented the Commission with information regarding the approach taken by the CNSC staff to address a list of technical issues initially identified by the International Atomic Energy Agency (IAEA) in the 2007 TECDOC *Generic Safety Issues for Nuclear*

Power Plants with Pressurized Heavy Water Reactors and Measures for their Resolution.[8] CNSC staff explained how these issues could be related to CANDU reactors in Canada, noting that the CNSC referred to these issues as CANDU Safety Issues (CSIs).

50. The public was invited to submit written interventions regarding CMD 16-M34 and three written interventions were received by the Commission. These submissions included CMDs 16-M34.1, 16-M34.2 and 16-M34.3. The Commission expressed its appreciation for the interventions received on this matter. However, the Commission expressed its disappointment that, given the nature of the interventions and the number of issues raised, a detailed disposition of the intervenors' main concerns was not provided to the Commission and enquired about the process that CNSC staff had used to disposition the interventions. The Commission finds that, due to the significant concerns and extensive work carried out by the intervenors in these submissions, concerns raised should be considered and dispositioned in a more comprehensive and transparent manner in order for the Commission to fully appreciate and consider the interventions. CNSC staff responded that it had dispositioned the main concerns raised in the interventions and that CNSC staff could provide these dispositions to the Commission.

51. The Commission is not satisfied that this information item adequately addressed all of the issues, including those raised by the intervenors. Some of the issues identified were discussed during this public meeting of the Commission and those are detailed in the paragraphs below. However, in light of the technically complex nature of the issues, the Commission has decided to continue this meeting item at a later date and directs CNSC staff to submit a CMD with its detailed dispositions of the technical points raised by the three intervenors, and more detailed information on the recategorization bases.

ACTION
by
December
2016

52. The Commission has instructed the Secretariat to issue a *Notice of Continuation of Commission Meeting Item with Opportunity to File Supplementary Written Submissions*. The CNSC staff dispositions will be made available to the public at a later date and the three original intervenors in this matter will be invited by way of the *Notice of Continuation* to make additional submissions on these issues. The Commission will conduct a comprehensive discussion on these matters at the March 2017 meeting of the Commission.

[8] International Atomic Energy Agency, *Generic Safety Issues for Nuclear Power Plants with Pressurized Heavy Water Reactors and Measures for their Resolution*, IAEA-TECDOC-1554, 2007.

Interventions

53. The Commission enquired about M. A. Duguay's written submission, CMD 16-M34.1, which expressed concerns about CNSC staff's expectation that the remaining Category 3 CSIs would be recategorized on a specific timeline, rather than ensuring that research into those issues was afforded the time required for their appropriate recategorization. CNSC staff provided detailed information about the process used for the recategorization of CSIs. CNSC staff further stated that, since preliminary research results in regard to these CSIs were available, the timelines and the use of the word "expectation" reflected informed estimates for the completion of the research, with appropriate decisions on the way-forward for the CSIs taken at that time. A Bruce Power representative concurred with CNSC staff, explaining that Bruce Power's research regarding large break loss of coolant accident (LBLOCA) CSIs was beyond the experimental stage, with Bruce Power having tested its methodology with a generic CANDU system. The Bruce Power representative further stated that Bruce Power was using this methodology to develop the safety case for LBLOCAs in regard to its reactors, and that Bruce Power was confident in the work that had been performed to date.

54. The Commission instructed that the language used to describe the timelines for CSI recategorization be modified to include an explanation that the timelines were not fixed and were based on the most recent research results.

55. The Commission invited staff and industry to comment on F. R. Greening's written submission, CMD 16-M34.2, which expressed concerns regarding the technical capabilities and the requisite knowledge and skills of CNSC and licensee staff. CNSC staff responded that the CNSC had a highly qualified group of specialists with the requisite technical capabilities to conduct reviews of the research and work performed by industry, including the work conducted in regard to CSIs, and to maintain appropriate regulatory oversight. CNSC staff also noted that research capabilities at universities and at facilities such as Chalk River Laboratories were key in ensuring that the work in regard to CSIs was done properly, with independent technical panels and representatives from universities often appointed to provide independent opinions regarding this work. A Bruce Power representative responded that Bruce Power had over 500 staff who specialized in nuclear engineering and reactor physics; however, it would not be practical for any organization to employ all of the specialists and personnel who had specialized expertise in all fields and Bruce Power contracted this expertise when required. The

Bruce Power representative explained that when an expert was contracted by Bruce Power, a thorough background check of the expert's qualifications was conducted by Bruce Power and verified by the CNSC.

56. The Commission sought feedback about S. Nijhawan's written submission, CMD 16-M34.3, which expressed concerns regarding the frequency of pressure and leak testing of containment structures at Bruce Power and OPG NGSs. The Bruce Power representative responded that Bruce Power was required by the CNSC to follow a strict containment testing schedule and that Bruce Power had done the required leak and pressure testing of the containment structures at Bruce A NGS in 2016 and at Bruce B NGS in 2015. CNSC staff confirmed that all NPP licensees had been compliant with pressure and leak testing requirements and provided additional information on this matter.

General Questions

57. The Commission noted that the flowchart provided in Figure 1 of CMD 16-M34 was very useful in explaining how CSIs were categorized. However, the Commission asked for CNSC staff to comment on whether the recategorization process was dynamic and if it could be bidirectional, with CSIs having the potential to move into either a higher or a lower category. CNSC staff responded that, while the process of CSI recategorization could be bidirectional, research is typically performed on the CSIs in order to gain a more in-depth understanding of the reactor behaviour, with the intention of improving those issues. CNSC staff did note that this research could uncover additional issues, which could trigger an investigation of their impact and further reassessment for appropriate CSI re-categorization. The Commission suggested that the flowchart should be modified to indicate the dynamic and bidirectional nature of CSI categorization.

58. The Commission asked for additional details about recent research that had shown that traditional LBLOCA modelling was overly conservative and that a pipe break would occur slower than previously postulated. A Bruce Power representative responded that the data showing that traditional LBLOCA modelling was overly conservative resulted from a multi-year effort and was obtained through modelling, experimentation, and contributions from many technical experts. The Bruce Power representative also stated that Bruce Power's and international research showed that, although a leak on a large pipe was possible, an instantaneous large break or complete shear on a pipe was virtually impossible unless caused by a secondary mechanism. CNSC staff provided additional

information regarding the limitations of traditional LBLOCA models, noting that the traditional methodology modelled a very unlikely event creating an unrealistic and overly conservative safety margin.

59. The Commission called for submissions on why assumptions in LBLOCA analysis had changed so significantly since 2007. CNSC staff explained that the previous LBLOCA model had been developed in the late 1980s, and that analytical and modelling capabilities had improved significantly since then. CNSC staff provided additional details on this matter, explaining that changes to key LBLOCA modelling assumptions increased the safety margins significantly.

60. In response to research results showing that traditional LBLOCA models may have been overly conservative, the Commission asked about how one could be confident that revised modelling was conservative enough. CNSC staff stated that the CNSC's primary priority was to establish conservative safety margins to ensure reactor safety and that, since there had been a significant increase in the understanding of fuel and reactor behaviour under accident conditions in the past decade, safety margins could be adjusted to reflect more realistic scenarios, while maintaining a high level of conservatism.

61. Noting that 21 CSIs were recategorized from Category 3 to Category 2 from 2007 to 2016, the Commission asked about the approximate time required for a CSI to be recategorized. CNSC staff stated that, although the amount of work required for the recategorization of a CSI was dependent on the complexity of the CSI and that it was a process of continuous progress, 17 CSIs had been recategorized in 2009 after industry had addressed them with previously agreed upon risk control measures.

62. The Commission noted that Category 1 CSIs were assessed to not be a concern in Canada, and enquired about why this category was still tracked and whether these CSIs could be of concern for international CANDU reactors. CNSC staff responded that when the 2007 IAEA TECDOC was published, CNSC staff addressed all of the findings in a Canada-specific disposition that could be shared with the international community. CNSC staff added that since Category 1 CSIs could still be of concern at international CANDU reactors, this comprehensive disposition allowed Canada to keep track of them and the work that was conducted to show that they were not of concern for Canadian CANDU reactors.
The Commission asked why the number of CSIs remained at 74 and why no new issues, such as safety enhancements after the

Fukushima Daiichi accident, had been added to the list since 2007. CNSC staff responded that CSIs were specific to the issues identified in the IAEA TECDOC in 2007, whereas the other issues were tracked by separate mechanisms, such as the Fukushima action items. CNSC staff also stated that it intended to merge these lists.

63. The Commission noted that, while some of the CSIs could be considered closed or on track to be closed, others could rather be considered a research subject for continuous improvement of reactor safety. The Commission instructed CNSC staff to develop a mechanism to track all identified and active CSIs, research subjects and action items concurrently.

64. The Commission emphasizes the importance of research into all potential CANDU issues, to ensure that the CNSC remained a highly effective and top-tier nuclear regulator. The Commission encourages CNSC staff to continue and expand, where practicable, its research in this regard.

Technical Review of Probabilistic Safety Assessment Issues Raised in an Anonymous Letter

65. In May 2016, an anonymous letter was sent to the President of the CNSC. The authors of this letter stated that they were CNSC staff and that they were writing anonymously to ensure that they were heard and because they did not have confidence in whistleblowing protection at the CNSC. The authors of this anonymous letter highlighted their concerns as follows:

    "Our primary concern is that CNSC Commissioners do not receive sufficient information to make balanced judgments.

    Secondly, because insufficient information is made available, other branches of government cannot make informed decisions. For example, the Government of Ontario cannot make a good decision about financing the refurbishment of Darlington without knowing all the facts.

    Finally, knowledgeable and interested members of the public cannot be involved in the licensing process unless all non-confidential information is released.

    We have attached a number of cases that we know about and that have been significant issues at recent public hearings.

We have made some suggestions that may alleviate the problems identified."

66. Upon receipt of the letter, Mr. M. Binder, the President of the CNSC, instructed that a technical review of the issues raised in the letter be conducted. Mr. P. Elder, a senior CNSC staff member, was asked to conduct this review. Therefore, with reference to CMD 16-M46 and CMD 16-M46.A, Mr. Elder presented the Commission with his technical review of the licensing and probabilistic safety assessment (PSA) issues raised in the anonymous letter. Specifically, Mr. Elder's report analyzed the factual accuracy of the authors' claims, assessed the overall safety importance of the issues raised, identified three opportunities for improvement and made recommendations in this regard.

67. In introductory statements, Mr. M. Binder, who is also the Chair of the Commission, stated that he considered an internal review performed by an experienced employee not involved in the files in question to be an industry best practice used by other regulators, including the US Nuclear Regulatory Commission. Mr. Binder added that such a review was, in his view, an important step which could help identify whether additional reviews, including third-party reviews, were warranted. Mr. M. Binder also addressed allegations that the CNSC muzzled its employees, stating that this was unequivocally untrue, with the CNSC encouraging research, scientific debate, and the publishing, posting and presentation of CNSC staff's work in appropriate venues and literature.

68. The Commission notes that four unsolicited submissions were received in regard to this meeting item. Due to the fact that the Commission had not opened this information item to interventions, and the short timeframe during which they were received giving the Commission, its staff and the involved licensees no opportunity to prepare, they were not admitted into the record and were therefore not considered in the context of this meeting item. The Commission, however, values public participation during its proceedings and therefore instructs the Commission Secretary or CNSC staff, as appropriate, to communicate with the authors of these unsolicited submissions to provide them, where applicable, with information regarding opportunities to intervene during upcoming public Commission proceedings.

ACTION
by
October
2016

69. The Commission asked Mr. Elder to give an overview of the regulatory use of PSAs in Canada as compared to the use of PSAs by international regulators. Mr. Elder provided details on this matter and stated that Canada's use of PSAs in a regulatory environment was consistent with that of international regulators.

Mr. Elder also clarified that PSAs were a tool used to identify potential improvements and the impact of these potential improvements at NPPs. PSAs were not used to set NPP operational limits; rather, deterministic safety analyses were used to set these operating conditions.

70. The Commission enquired about the 83 "specific areas" within the CNSC's 14 safety and control areas (SCAs) that CNSC staff reviewed for licensing and compliance activities. Mr. Elder provided information about the SCAs and the 83 specific areas, noting that not all of them were important to every licensing decision. Mr. Elder also explained that PSAs could therefore be an important specific area in a licensing review, but it was not the only specific area that needed to be considered. CNSC staff concurred with this information, emphasizing that a completed PSA or a PSA update was not required for all relicensing activities.

71. The Commission further enquired about PSA timing and updates in regard to regulatory activities, noting that S-294[9] required that licensees updated their PSAs every three years and that the most recent REGDOC-2.4.2[10] required this update every five years. Mr. Elder provided details on this matter and explained that PSA timing depended on the purpose of the PSA, such as evaluating the risk during maintenance or refurbishment, or the risk of the activities being conducted at the plant at the time of the update.

72. The Commission asked Mr. Elder to explain how PSAs helped improve precision during risk evaluation. Mr. Elder responded that PSAs helped establish where a deterministic safety assessment may be excessively conservative and could identify additional weaknesses in plant safety. Mr. Elder noted that the combination of both deterministic safety analysis and PSA resulted in a more accurate picture of overall plant safety. CNSC staff concurred with this information and provided additional details on how deterministic and probabilistic safety analysis were used together to improve risk assessment.

73. The Commission enquired about the possibility of the manipulation of a PSA model to obtain a more desirable outcome. Mr. Elder responded that S-294 and REGDOC-2.4.2 required detailed CNSC staff review of PSA methodology which significantly decreased the possibility of PSA model manipulation and made the PSA auditable. CNSC staff provided detailed information on PSA

[9] CSNC Regulatory Standard S-294, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, April 2005.
[10] CNSC Regulatory Document REGDOC-2.4.2, *Probabilistic Safety Assessment (PSA) for Nuclear Power Plants*, May 2014.

reviews, noting that these reviews included multiple CNSC divisions and external experts.

74. The Commission called for additional information from CNSC staff regarding the allegations about PSA in the anonymous letter. CNSC staff provided information regarding erroneous information and assumptions in the allegations. CNSC staff further noted that the CNSC's decision-making was risk-informed rather than risk-based and that, although the letter focused on NPP safety in terms of PSAs, these are only one component of this comprehensive analysis.

75. The Commission noted some discrepancies in the Bruce Power NGS hearing dates that were provided in the anonymous letter. Mr. Elder responded that, although the licence renewal hearing was held in 2015, the Commission had amended the Bruce Power licence in April 2014. To ensure a conservative analysis of the timelines for PSA submission, this 2014 licence amendment was considered during the technical assessment. Mr. Elder noted that the conclusions in the technical assessment in regard to this case, including that Bruce Power was complying with its licence, were valid regardless of the hearing dates considered.

76. The Commission enquired about whether the Darlington, Pickering and Bruce Power NGS were fully compliant with CNSC regulatory requirements for PSAs. CNSC staff responded that the licensees were fully compliant and provided details about the PSAs that had been conducted at the NGS. CNSC staff also stated that it would not sign off on any documentation in regard to any regulatory matter, including PSA, unless it was satisfied that the licensee was meeting regulatory requirements.

77. The Commission noted that, besides the safety issues raised in the letter, one of its major concerns was the allegation that information relevant to Commission decisions was being withheld by CNSC staff. In this vein, the Commission asked for more details regarding differences of professional opinion between CNSC staff that had been uncovered during the technical review of the letter. Mr. Elder stated that the technical review did not identify any cases of information being withheld from the Commission and that CNSC staff was very systematic in its review of the 14 SCAs, the development of CMDs, and always strived to provide the Commission with all of the information that could be relevant to the Commission's decision. Mr. Elder further stated that, in the case of the Bruce Power hearing, there was disagreement amongst CNSC staff in regard to Bruce Power's compliance with S-294, with these concerns escalated to senior management as per

established procedures and resolved to the satisfaction of the dissenting CNSC staff. CNSC staff provided additional details on this resolution, stating that CNSC staff was expected to follow a 'no-omission' rule when providing facts and information to the Commission.

78. The Commission requested additional details regarding Bruce Power's PSA. CNSC staff provided detailed information regarding the Stage 1 and Stage 2 PSA reviews, including the timelines for these reviews. CNSC staff also stated that, after expressing concerns about the scope of the PSA Stage 1 review to CNSC senior management, CNSC staff went to the Bruce Power NGS, conducted an inspection and was able to report on the inspection findings openly and without constraints.

79. The Commission requested additional details about the concerns expressed in "Case 4" of the anonymous letter regarding OPG's updated Darlington seismic hazard assessment and enquired about how CNSC staff decided what level of information to include in CMDs. CNSC staff provided the Commission with an explanation about the seismic hazard modelling at Darlington and stated that Natural Resources Canada had reviewed and concurred with the seismic hazard assessment findings in relation to the PSA. CNSC staff further explained that this issue had been fully resolved prior to the 2015 licensing hearings, was not an issue of safety significance and was therefore not included in the CMD. CNSC staff also provided the Commission with detailed information on the CMD development process and the information that was included in CMDs.

80. The Commission requested additional details about the allegations in "Case 1" and whether the isolation of a single unit at an NGS constituted a major change that would require a fully updated PSA. CNSC staff responded that the reliability of the system was actually improved when a unit was isolated and provided details about how potential failures were eliminated. CNSC staff also stated that deterministic safety analyses for unit isolation at Darlington had been conducted and showed that licensing requirements would be met, that there would be no increase in risk and that overall system reliability would improve. CNSC staff further noted that having one unit in isolation was within the previous and current licensing basis for the Darlington NGS, that OPG was meeting regulatory requirements in this regard and that OPG had committed to submit to the CNSC an updated PSA to further characterize unit isolation in 2016.

81. CNSC staff provided the Commission with information regarding the various mechanisms that the CNSC had in place to allow CNSC staff to express concerns and to resolve differences of professional opinion. The Commission noted that the CNSC had a large variety of these mechanisms in place, including whistle-blowing protection mechanisms that provided anonymity to the whistleblower, and enquired about how often these mechanisms were used. The Commission Secretary, who is the champion of the Informal Conflict Management System (ICMS), responded that there were approximately 40 situations per year involving individuals or groups seeking advice on resolving problems through the ICMS and that there were no formal whistleblower complaints made within the government process in the last year. The Commission Secretary further noted that many such differences of opinion were resolved through less formal channels or with the assistance of the Office of Audit and Ethics. CNSC staff also provided additional detailed information on the processes that were followed to resolve conflicts and differences of opinion.

82. The Commission enquired about the NUREG initiative to enshrine scientific integrity in the CNSC's collective agreement. The CNSC staff NUREG representative responded that enshrining scientific integrity in the collective agreement through a science policy was an active union initiative to ensure that scientific integrity was maintained at the CNSC. The President noted the CNSC's commitment to also include this science policy as part of the CNSC policies.

83. The Commission called for comments from CNSC staff about why an anonymous letter was sent in place of using all of the conflict resolution and whistleblower mechanisms described. CNSC staff responded that with the CNSC being a learning organization, CNSC staff did not question the authenticity of the authors and focused its efforts on determining why the whistleblower mechanisms may have failed. CNSC staff stated its commitment to safety culture, to implementing the three recommendations in P. Elder's technical review and to ensuring that CNSC staff had the adequate access to conflict resolution information while minimizing the fear of reprisals.

84. The Commission enquired about whether the CNSC had carried out any safety culture assessments. CNSC staff responded that a formal safety culture assessment had not been conducted but that internal surveys were made on a regular basis. CNSC staff also stated that the CNSC was progressing with embedding safety culture in its management system and provided information about safety culture at the CNSC.

Adequacy of Technical Review and P. Elder's Recommendations

85. Based on the information provided, the Commission is of the view that P. Elder's technical review provided adequate technical basis for the conclusions drawn. The Commission is of the view that the technical review demonstrated with some detail that PSAs at Darlington, Pickering and Bruce NGS were adequately conducted, reviewed by the CNSC and reported on. Furthermore, the Commission is satisfied that the issues raised in the anonymous letter are not of safety concern, immediate or otherwise.

86. The Commission wishes to note that the Commission considered the nine recommendations made by the authors of the anonymous letter. While the consideration of some of the recommendations is reflected in the paragraphs above, the Commission is satisfied that the remaining recommendations are either already implemented by CNSC staff and / or licensees or are not required at this time.

87. The Commission is satisfied with the information it received during the Bruce Power NGS and Darlington NGS licensing hearings and does not intend to reconsider licensing in these matters.

88. For these reasons, the Commission is satisfied that P. Elder's technical review satisfactorily addressed the matters in the anonymous letter and that an external third-party review is not required. While acknowledging that Mr. Elder is a CNSC manager, and is therefore not independent of the organization, the Commission finds his report to constitute valuable expertise and an impartial treatment of the issues. The report, the discussion of the letter and the issues in its meeting, satisfy the Commission.

89. The Commission expects CNSC staff to address and implement P. Elder's three recommendations, which are considered by the Commission in additional detail below. In regard to Recommendation 1, "The regulatory role of the PSA should be clearly documented," the Commission is of the view that the role of the PSA, as well as that of the whole-site PSA, should be better explained and documented by CNSC staff, as recommended. The Commission notes that several upcoming NGS licensing hearings and future NPP Reports will provide opportunities to implement this recommendation. — ACTION by August 2017

90. To obtain a more thorough explanation on the role of PSA, the Commission requests that CNSC staff engage third-party experts in providing information regarding PSA international best practices, whole-site PSAs and where PSAs fall within the safety framework. — ACTION by August

This information is to be presented during upcoming Commission meetings and licensing hearings, as appropriate. — 2017

91. The Commission instructs CNSC staff to include in future NPP Regulatory Oversight Reports a full update on the status of completion of PSAs at all CNSC-licensed NGS. — ACTION by August 2017

92. The Commission expects CNSC staff to implement Recommendation 2, "CNSC management needs to more clearly document the required scope and depth of technical reviews necessary to support licensing," to ensure consistency in the technical assessments conducted and the scope of information presented by CNSC staff to the Commission.

93. The Commission notes its disappointment that the authors of the anonymous letter felt that they could not use the mechanisms that the CNSC has in place for raising issues. The Commission fully expects CNSC staff to implement Recommendation 3, "CNSC management should reinforce with staff all the processes available for raising issues, including the role of the Office of Audit and Ethics." In addition, the Commission expects CNSC staff to investigate why the CNSC's current mechanisms for raising issues are underutilized and determine whether more effective mechanisms could be implemented.

94. In regard to safety culture, the Commission notes that an organization with a healthy safety culture must allow its staff to express differences of opinion without fear of reprisal. The Commission recognizes the efforts of CNSC staff in implementing a strong safety culture at the CNSC; however, the Commission notes that the CNSC does not have a formal safety culture assessment mechanism. The Commission expects CNSC staff to implement a mechanism to formally assess its safety culture as soon as practicable. — ACTION by August 2017

95. The Commission also requests CNSC staff to provide the Commission with an update on this item in the spring of 2017. — ACTION by March 2017

Regulatory Oversight Report (ROR) for Canadian Nuclear Power Plants:2015

96. With reference to CMD 16-M30, CMD 16-M30.A, and CMD 16- M30.B, CNSC staff presented its annual report for 2015 on the safety performance of the Canadian nuclear power industry. CNSC staff highlighted the performance rating methodology and process, and presented the resulting safety ratings for nuclear

generating stations (NGS) across all safety and control areas (SCA), as well as the industry average ratings. CNSC staff also reported on the compliance verification program and compliance activities, and provided an overview of the event initial reports (EIR) submitted to the Commission during 2015. The report also encompassed the industry regulatory developments including the neutron overpower protection (NOP) methodology, counterfeit fraudulent suspect items, the role of the probabilistic safety analysis (PSA) in CNSC regulatory framework, completion of the actions related to the Fukushima accident response, and new nuclear project at Darlington.

97. Representatives from Canadian NPP licensees submitted their comments regarding CNSC staff's findings presented in the report. OPG representatives informed the Commission on the results of conducted safety analysis of moving OPG's used fuel from irradiated fuel bays into dry storage after six years of cooling, instead of ten years. OPG decided not to move to six-year-old dry fuel storage since there was no demonstrated safety benefit to moving the fuel into dry storage more quickly, and OPG has sufficient bay capacity to maintain its current storage procedure. The Commission is satisfied with the information received from OPG in this regard.

98. Representatives from Bruce Power informed the Commission about the changes in the company's management, the investments and improvements that Bruce Power had made over the last few years, as well as about preparation to extend the operation of the facility to 2060. Representatives from NB Power submitted that, in mid-January 2016, the CNSC, Natural Resources Canada and the Ministry of Environment and Climate Change Canada staff had completed their respective reviews of the Point Lepreau site-specific seismic hazard assessment, and had been satisfied with the results and the related follow up. The NB Power representatives further informed the Commission about a corrective action plan for areas identified for improvement of operating performance and management systems, and provided an update to the business improvement plan. A representative of the Gentilly-2 NGS updated the Commission with activities related to the decommissioning of the facility.

99. With reference to CMD 16-M30.C, CNSC staff further presented its update regarding the Exercise Unified Response (ExUR) conducted from May 26 to May 28, 2014, at Darlington NGS. CNSC staff reported on Action Plan Updates introduced by the CNSC, OPG, Region of Durham, Ontario Office of the Fire Marshal Emergency Management (OFMEM) and Health Canada.

The update also included information on radio interoperability in the Region of Durham, update on the Ontario planning basis for Provincial Nuclear Emergency Response Plan (PNERP), as well as CNSC staff's recommendation for closure of the Commission actions relating to ExUR.

100. The Commission received eight written interventions regarding CNSC staff's report. Most of the interventions supported CNSC staff's findings and conclusions, while the submission by Greenpeace included recommendations and requests, some based on the letter from an anonymous group, which was addressed by the Commission as a separate item during this meeting. The Commission did allow, however, the Greenpeace representative to present his views orally in this Commission proceeding.

101. The Commission asked about the report prepared in response to the earlier intervention by Dr. Nijhawan in CMD 16-M34.3. The OPG representative responded that the industry worked through the CANDU Owner's Group (COG) to prepare a draft report which addresses the highest priority concerns of Dr. Nijhawan.Dr. Nijhawan has advised that he will review the report when all of his concerns have been addressed. The draft had also been provided to CNSC staff and was being reviewed by them. The OPG representative added that they had obtained comments from a third-party review of the report, and that they intend to finalize the report after receiving comments from CNSC staff. CNSC staff added that they, also, had engaged a third party to review the draft report, and that they were in the process of getting external review. CNSC staff is committed to come before the Commission with its final findings on this matter.

ACTION
by
March 2017

102. The Commission deliberated on the action items considered in CMD 16-M30 and CMD 16-M30.A. The Commission agreed with the recommendations from CNSC staff to close the action items, except in the cases of action items M2016-02, M2016-09, H2015-04, H2015-16 and H2015-17, which remain open. Additionally, action items H2015-02, H2015-03 and H2015-15 have been combined into a single action item, which also remains open.

Interventions

103. With reference to Greenpeace's written submission (CMD 16-M30.1), the Commission asked CNSC staff for clarification regarding the International Nuclear Event Scale (INES) accident rating used in the severe accident study (SARP), as mentioned in the ROR, and its alleged misrepresentation in that report. CNSC staff provided a summary of research done in the study and noted

that the study direction had been to assess a severe accident that was larger in magnitude and more severe than any that had been assessed in previous major environmental assessments. The radiological impacts of the postulated accident had been found by CNSC staff and by reviewers to be similar to those experienced in Fukushima. CNSC staff provided a detailed explanation of the INES rating system and its primary role as a communication tool. CNSC staff stated that INES was not meant to be a predictive tool nor intended to be used to develop and implement emergency response programs, and that the implementation of emergency response actions cannot be correlated backwards to an INES rating since these measures may be precautionary in nature. CNSC staff underlined that the IAEA member states are solely responsible for using the INES scale and the rating of an event, and summarized that the postulated and very improbable event presented in the SARP report would likely be rated as an INES Level 7 event, should such an event occur.

104. Responding to the intervenor's insisting that the releases postulated in the SARP did not correspond to the INES Level 7 and that the study had been discredited, CNSC staff reiterated that the INES scale is a communication tool and that the study dealt with doses similar to those recorded during the Fukushima event. The purpose of the study was to probe an event resulting in releases higher than what was typically required under an environmental assessment, and to examine the emergency planning for an event involving doses of a significant magnitude. The Commission notes that CNSC staff stated in an internal briefing note to the President attached in Greenpeace's intervention that, based only on source term, the SARP study would correspond to an INES 6 event.

105. Greenpeace, in its intervention, recommended that the Commission allow for cross-examination during hearings, stating that the Commission would benefit from this process. The Commission does not agree. In its proceedings, the Commission is mindful of its statutory obligation to deal with matters "as informally and expeditiously as the circumstances and the considerations of fairness permit". Given the nature of its proceedings, introducing cross-examination at this stage could risk sacrificing the informality and expedition that allows the Commission to access the information it needs, without a clear benefit. From a fairness perspective, the Commission has the scope to ask the questions it finds necessary to obtain the information it needs, in order to make its decisions. The Commission also regularly invites intervenors to comment on responses that are provided by parties or CNSC staff

orally in the proceedings. The Commission considers that its current practices meet its statutory mandate and its information needs.

106. The Commission asked the Office of the Fire Marshal and Emergency Management (OFMEM) whether the SARP study was useful for OFMEM's planning requirements. A representative from the OFMEM responded that the SARP study was helpful, that they had considered a number of other reports, and that the Provincial Nuclear Emergency Response Plan (PNERP) also includes other tools that would be used in the assessment process and the determination of a planning basis.

107. The Commission sought clarification from the intervenor about the statement that the SARP study was discredited. The Greenpeace representative responded that the study did not respond to stakeholders' concerns regarding the level of postulated releases, and that the way CNSC staff used it was misleading to decision makers dealing with emergency management. The Commission noted that the SARP study had responded to the requirements of the Commission and pointed out that the study was found useful as one of the elements used by the OFMEM in their planning activities. The Commission expressed its satisfaction with results of post-Fukushima activities related to risk reassessments for severe events, implementation of additional protective measures, and activities related to communication with the OFMEM and other provincial and local authorities involved in emergency management.

108. The Commission asked for an update regarding a commitment by CNSC staff to release unedited e-mail correspondence between CNSC staff and the Director of the Darlington Regulatory Program Division of the CNSC regarding the reporting on SARP study results. In the intervention by Greenpeace, it was stated that only a redacted version had been offered. The representative from the Commission Secretariat responded that the unedited document had been made available on November 27, and that the Secretariat did not receive any requests for the document. The representative from the Commission Secretariat added that the unedited document had been handed to the Greenpeace representative on August 17, 2016.

109. With reference to the written submission from South Bruce Grey Health Centre (CMD 16-M30.2), the Commission enquired about the result of improvement in emergency management related to the Memorandum of Understanding (MOU) between the Association of Municipalities of Ontario (AMO) and the Province of Ontario, which was mentioned in some interventions. The Bruce Power

representatives responded that they have MOUs with a number of agencies that would be involved in emergency response and that the health centre had been involved, both from training and from an equipment point of view, in activities related to emergency management improvements. Bruce Power had contributed funds towards upgrades to the hospital and contributed to the training of staff. The Bruce Power representatives added that all municipalities, hospitals and other organizations included in two existing MOUs would participate in the Huron Resolve exercise that is planned for late 2016.

110. The Commission asked the OFMEM about deadlines related to the provincial emergency planning and launching the public consultation. The OFMEM representative responded that the public consultation was targeted for the fall 2016, subject to Provincial Government approval, and that a consultation strategy had been put forward for approval. The Commission asked Health Canada about plans and timelines related to the emergency management issues such as recovery and sheltering. Representatives from Health Canada responded that, after the Fukushima event, the Federal Nuclear Emergency Plan (FNEP) had been updated in 2012 and tested through a number of exercises, including the Exercise Unified Response. These exercises demonstrated that the plan was sound and that the federal agencies, working with provincial and municipal partners and NGOs, are ready to respond to a nuclear emergency. The representatives from Health Canada also described the updates being done to several other related documents, and that all the comments from the public consultation of the Protective Action Guidelines would be in by September 2016, at which point they would be reviewed. The Health Canada representatives expect that the suggestions and recommendations in the revised Public Action Guidelines will be implemented in early 2017.

111. With reference to the written submission from the Municipality of Kincardine (CMD 16-M30.3), the Commission asked about the delivery of potassium iodide (KI) pills to guests and temporary dwellers in the area. The Bruce Power representative provided details on measures taken for KI distribution to permanent and temporary residents, as well as communication activities.

112. With reference to the written submission from the County of Bruce (CMD 16-M30.6), the Commission asked whether workshops and briefings organized by Bruce Power for key community stakeholders were open to the public. The Bruce Power

representative responded that these workshops were organized in a public forum and were open to the public, but were focused on regional business owners, regional governments, and people that were interested in the economic impacts on the Bruce area.

General Questions

113. The Commission complimented CNSC staff on this year's regulatory oversight report, and congratulated the licensees and other participants in the regulatory process for an excellent year of performance.

114. The Commission requested that all scientific studies performed at the Commission's request by CNSC staff, licensees or by third parties, be made available to the public.

115. The Commission pointed out minor imprecisions in the ROR, suggested small editorial changes, and noted that 2015 was a year of excellent performance regarding Canadian NPPs. The Commission asked about international comparison in terms of indicators such as reactor trips and forced loss rates. The Commission also asked about other indicators that could be added to help in comparison of the performance of Canadian NPPs on the international scale. CNSC staff provided details on these indicators. CNSC staff added that they would look for ways to improve the reporting by increasing the number of international comparators. The representative from Bruce Power explained the monitoring of WANO indicators and noted that the significant lowering of the forced loss rate, which is for Canadian NPPs currently poorer than the WANO average, was targeted in their new comprehensive asset management plan. The OPG representative noted that the high forced loss rate experienced in OPG facilities was coming primarily from planned shutdowns, and that a major factor in forced loss rate within OPG was fuel handling capabilities. The Commission suggested that safety performance indicators could be added to the appendix of the report and be related to each SCA.

116. The Commission enquired about a potential to improve performance of currently operating reactors, measured by the above-mentioned performance parameters. The OPG representative submitted that they were constantly driving improvement in forced loss rate and that their contributors in forced loss rate were economic decisions rather than safety decisions, since the OPG business plans were targeting the sensible economic forced loss

rate. The NB Power representative responded that they had put together an equipment reliability improvement program to deal with the issue.

117. With respect to the performance rating methodology, the Commission asked whether the rating was done by specifically trained CNSC specialists, or by a specific team. CNSC staff explained the rating process. The Commission suggested that CNSC staff prepare an example-calculation applied to one of the SCAs, as part of the report.

118. The Commission asked about reasons for the missed safety system tests reported in the ROR, particularly for Bruce A NGS and Point Lepreau NGS. The representative from Bruce Power explained the reasons and actions taken to resolve the issues. The representative from NB Power submitted that the cause at Point Lepreau was the same and noted that they did not have any missed tests for the last 11 months.

119. The Commission enquired about the reported maintenance backlog deficiencies, potential implications for the safe operation of the facilities, and comparison with international WANO standards. The representative from Bruce Power explained the maintenance backlogs that are typically tracked by WANO, as well as causes for these backlogs. CNSC staff submitted that, taking into account positive trends and evidenced improvements, this issue does not represent significant safety concerns. The Commission suggested that, in future reports, information on trending and WANO expectations, as well as numbers for industry averages, be included.

120. The Commission sought more information about a new methodology for OPG and Bruce Power to set trip points related to reactor neutron overpower protection (NOP). CNSC staff responded that reactor operators continuously check their trip set points and that CNSC staff makes sure that a trusted methodology is used by industry to establish adequate trip set points. Any attempt to change trip set points has to be reported to the CNSC. Substantive changes in this methodology, made by the industry, had been extensively discussed, and CNSC staff will be monitoring how the industry implements the introduced changes. The OPG representative explained that the new methodology would result in increased safety margins.

121. The Commission asked about reasons for a great variability in internal doses to workers, from station to station. CNSC staff responded that the internal doses are a function of the outage work

and opening systems. Representatives from the industry explained that the existing differences with respect to equipment, station design and duration of outages in different NPPs are the cause for different internal doses to workers. The representative from the Pickering NGS informed the Commission about measures taken to improve radiation protection in the station. The representative from Darlington NGS explained how their activities related to preparation for refurbishment contribute to the increase of internal doses in this NGS. The representative from NB Power confirmed that openings of the heat transport system or the moderator system that occur during an outage, contribute to an overall increase of the collective internal dose. The Bruce Power representative also provided details on actions taken to keep internal doses at low levels.

122. The Commission noted that the rating for security SCA, for some facilities, had trended down from "fully satisfactory" to "satisfactory", and asked for the reasons for such a change. CNSC staff explained that a "satisfactory" rating means that a licensee is fully compliant with the licence and regulatory requirements, and a "fully satisfactory" rating means that a licensee has gone beyond the requirements. CNSC staff submitted that the change falls within normal annual variations of the ratings aggregated through a number of specific fields, many of which show improvements, and that a trend over the last 14 years shows a visible improvement.

123. The Commission asked about the introduction of digital fingerprinting as added security at the NGSs. CNSC staff explained that the fingerprinting process has always been in place, and that the change was that the RCMP will be accepting only digital fingerprints in the future. In response to this change, the industry has started a process to respond to this new requirement.

124. The Commission asked if there were uniform criteria for all nuclear power plants to complete the self-assessment so that they could compare their performances. CNSC staff responded that, in terms of self-assessment processes, there are clear criteria in the regulatory requirements for management systems, which is the CSA 286 standard, as well as some guidelines in the commentary document to the CSA standard. The licensees conduct self-assessment routinely to provide information to management on their performance in various areas, and this is part of the management review process. The licensees use this tool to self-identify issues that they need to correct. CNSC staff described the importance and application of self-assessment using the safety culture self-assessment as an example.

125. The Commission enquired about the use of the whole site PSA in other countries. CNSC staff responded that Canada collaborates with other countries in this area and that a number of countries were interested in supporting development of the whole site PSA, in methodologies and safety goals. CNSC staff described the work being done in this area. CNSC staff noted that a relatively small number of countries use the whole site PSA as a requirement, and explained the use of this assessment in some countries, e.g. the USA.

126. The Commission enquired about public outreach and Aboriginal consultation activities. CNSC staff informed the Commission about their meetings with the First Nation and Métis communities and about a variety of topics discussed during these meetings. CNSC staff highlighted the ongoing work on an agreement for a Bruce sitewide monitoring program, between OPG, Bruce Power and the Métis Nation of Ontario.

127. The Commission asked about including in the report information on reactor chemistry. CNSC staff responded that there is information on this topic in the fitness for service section of the ROR. The Commission asked CNSC staff to look at information of this nature published by the USA NRC and consider posting it on the CNSC website.

Emergency Management

128. The Commission sought more detail regarding the radio interoperability issue and asked whether the municipalities were satisfied with plans to fix the issue. Representatives from Durham Region expressed their satisfaction with OPG's decision to add OPG's fire and security system onto the existing region's next gen interoperable radio system. CNSC staff committed to monitor and report to the Commission annually on the progress of the activities related to this issue.

ACTION
by
August 2017

129. The Commission sought more information regarding a recent update of the Ministry of Transportation of Ontario evacuation plan for Pickering and Darlington. CNSC staff responded that the update encompasses population and demographic information and road information. That updated information has been included in Durham Region's recently updated plans and it is expected that the update and revision of the PNERP would also take this into account.

Ontario Power Generation

130. The Commission asked OPG about the public reaction to OPG's "Repurposing Pickering" initiative. The OPG representative responded that the Repurposing Pickering Program is an ongoing program with the intent to provide input to OPG's thinking about how the site could be used in the future, after the power reactor operations are completed. The OPG representative added that the repurposing study and a final report are expected to be completed in about two years.

131. The Commission sought more detailed information regarding areas of improvement identified during the inspections of OPG's electrical systems, as mentioned in the ROR. CNSC staff described the identified deficiencies in monitoring and testing of electrical installations. The OPG representatives explained that they did not have clarity in their documentation regarding the inspection frequency. As a result of the finding, OPG had updated their programs to be more specific around their inspection frequency for cables.

132. The Commission asked about Pickering NGS application to the Department of Fisheries and Oceans (DFO) for a fisheries permit. The OPG representatives explained the communication with DFO and CNSC staff on this matter. OPG expects to have the application accepted and the permit issued by about the middle of 2017.

Bruce Power

133. The Commission asked Bruce Power for clarification regarding the minimum shift complement, which has not been met on several occasions, as mentioned in the ROR. The representative from Bruce Power responded that prominent reasons for this issue were either weather or a sick call, and described actions taken by Bruce Power to resolve the issue. The Bruce Power representatives clarified that the deficiency mentioned in the ROR refers more to violation of hours of work restrictions in order to maintain minimum complement, than to minimum complement itself. The Bruce Power representative added that an issue with the reporting process, related to this problem, had been discussed with CNSC staff and that Bruce Power would provide a report to CNSC staff.

Énergie NB Power

134. The Commission sought more information regarding the report on NB Power seismic hazard assessment. The NB Power

representatives provided a summary of actions taken on this report. The NB Power representatives added that the summary of the report had been posted on their website. CNSC staff reported that they had reviewed and were satisfied with the submitted site-specific seismic hazard assessment. CNSC staff said that they would shortly complete an additional review of the engineering implications of the assessment with respect to the station. CNSC staff also added that they recommended the closure of this action item since the other one covering the issue, with the OFMEM, will remain open. The Commission requested that, in addition to the summary, the entire document be posted on the website, and requested an update on this issue prior to the mentioned licence renewal hearing. The Commission is not satisfied with the information it has received on seismic hazard assessment at Point Lepreau NGS and notes that Commission action M2016-02 will remain open with a new due date of May 2017.The Point Lepreau NGS seismic hazard assessment will be revisited at the Point Lepreau NGS re-licensing hearing in May 2017, providing an opportunity for more detailed discussion on this matter.

ACTION
by
May 2017

135. The Commission sought clarification regarding the statement in the ROR regarding CNSC staff's issuance of an enforcement action that requires NB Power to review its waste management program. CNSC staff explained that the issue was about hazardous waste and not radioactive wastes. The NB Power representative added that some procedural deficiencies, identified during an inspection of the site, had been corrected. All the action notices have been closed after the follow-up inspection and the outcome of the root cause analysis is expected by the end of August 2016.

Énergie NB Power: Update on the 2015 Intrepid Exercise

136. With reference to CMD 16-M31, NB Power presented an update on the NB Power's participation in the 2015 Intrepid Exercise held in November 2015 at the Point Lepreau NGS. The presentation included a description of the exercise, its objectives, highlighted best practices and opportunities for improvements in the provincial emergency planning. The presentation included a video clip about the exercise.

137. The Commission appreciated the presentation by NB Power, including the video segment. The Commission sought clarification regarding differences in terminology used in planning zones off-site and on-site. The NB Power representative responded that this issue had been identified as a cause of potential miscommunication and would be addressed before it becomes an issue; however, to date it had not caused any issues, due to close collaboration

between NB Power and its provincial counterparts. The Commission enquired about the existence of a similar issue in Ontario. CNSC staff responded that the issue does not exist since the licensees' plans in Ontario make reference to the exact names of the zones that are used by the province or defined by the province.

138. The Commission enquired about lines of responsibility and hierarchy of authorities involved in decision-making during an event. The NB Power representatives described the existing procedures and explained the lines of responsibility and accountability on local and provincial levels.

139. The Commission asked about an opportunity offered by this exercise to measure the public confidence in the capability of the different agencies. The NB Power representative responded that measuring public confidence had not been set as one of the exercise objectives, and noted that, in all actions, volunteer participation, and other interactions, the public had been very supportive.

140. The Commission asked about plans for the next exercise of this scale, and how much such an exercise costs. The NB Power representative responded that an exercise of this nature is organized approximately every three years, and a cost of such an event would be of the order of several millions of dollars.

141. The Commission enquired if there were any CNSC action items that NB Power needs to complete as a result of this exercise. CNSC staff responded that, based on their assessment of this major exercise and the inspection, concluded that NB Power had met all regulatory requirements. Four minor recommendations for improvements had been issued based on on-site observations. CNSC staff noted that the observations were similar to those recorded during the Unified Response Exercise.

<u>CNSC staff update on nitric acid spill at Cameco’s Port Hope Conversion Facility on April 1, 2016</u>

142. With reference to CMD 16-M45, CNSC staff presented an update on an event involving a spill of nitric acid at Cameco’s Port Hope Conversion Facility in Port Hope, Ontario. CNSC staff provided a verbal update of the event at the April 6th, Commission meeting.

    The Commission requested at that time another update once CNSC staff had reviewed Cameco’s root cause analysis and assessed the proposed corrective actions.

143. CNSC staff verbally informed the Commission that, on August 15, 2016, a CNSC staff inspector carried out a follow-up inspection at the facility and verified that Cameco had addressed the immediate corrective actions and is on track to complete all of the corrective actions by October 2016. CNSC staff is satisfied that Cameco's current design and change control processes adequately ensure that such an event will not occur again. CNSC staff is also satisfied with Cameco's response on this matter and will track Cameco's implementation of corrective actions. CNSC staff added that Cameco has shared information related to this event with all Cameco sites, including the mines and mills and OPEX. Cameco stated that its workers involved provided a thorough and timely response to the event and in accordance with procedures and training.

144. The Commission asked if the erroneous use of Monel instead of stainless steel had happened previously. CNSC staff responded that Monel looks very similar to steel, and the use of this material a few years ago is the main reason for this incident. CNSC staff added that Cameco did a thorough investigation and confirmed that Monel had not been used anywhere else. The Cameco representative noted that controls have been put in place and include instructions on the verification of the materials and on providing information to the worker on the nature of the materials. The Commission considers this item to be closed.

EVENT INITIAL REPORT

Cave Inspection Ltd: Loss of a Radiography Exposure Device

145. With reference to CMD 16-M47, CNSC staff reported an Event Initial Report on the loss of an exposure device on August 3, 2016, in the Edmonton, Alberta area. The licensee subsequently recovered the device on August 4th. Surface radiation readings indicated that the source remained in the shielded position. CNSC staff is awaiting the detailed event report from the licensee, due 21 days after the event. CNSC staff confirmed that the licensee is expected to perform a full investigation on this issue.

146. The Commission asked for the level of risk if a member of the public found the device. CNSC staff responded that the device is labelled as having a radioactive source in it, and that contact information is also provided. The device would be safe to handle as it is in a regulated package.

147. The Commission enquired on the location of the device when it was found. CNSC staff explained that it was found approximately 7 to 8 metres from the road, and that it possibly bounced off a truck.

148. The Commission asked what would happen if the device would not be found. CNSC staff responded that the licensee was expected to do everything in its power to find it. The local police and the IAEA were advised of the loss, and the loss was also reported through a networking system that includes recyclers. Notification could also have subsequently been made to the general public, with a picture.

149. CNSC staff submitted that there would be no need to come back in front of the Commission, as a follow-up of the event can be done by an appropriate member of CNSC staff. The Commission agrees that no follow-up of the event needs to be done in a public meeting. However, the Commission requests CNSC staff to provide the Commission with a memo containing details of the follow-up actions from this event.

ACTION by December 2016

Recording Secretary — Date: Nov. 2, 2016

Recording Secretary — Date: 2016-11-02

Recording Secretary — Date: Nov. 2, 2016

Secretary — Date

APPENDIX A

CMD	DATE	File No.
16-M39	August 3, 2016	e-Docs 5042502
Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on August 17 and 18, 2016 in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa Ontario		
16-M39.A	August 11, 2016	e-Docs 5055704
Updated Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on August 17 and 18, 2016 in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa Ontario		
16-M39.B	August 15, 2016	e-Docs 5060054
Updated Agenda of the Meeting of the Canadian Nuclear Safety Commission (CNSC) to be held on August 17 and 18, 2016 in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa Ontario		
16-M40	August 15, 2016	e-Docs 5060042
Approval of Minutes of Commission Meeting held on June 22 and 23, 2016		
16-M41	August 15, 2016	e-Docs 5056997
Status Report on Power Reactors		
16-M42	August 12, 2016	e-Docs 5058733
Status Report on Fitness for Service for the Chalk River River Laboratories - CNL Submission from CNSC Staff		
16-M35		e-Docs 5011416
Information Items: Update on the Development of Licence Limits for Hazardous Substances: specific emphasis on uranium mines and mills Presentation by CSNC Staff		
16-M34	June 16, 2016	e-Docs 5016949
Information Items: Risk-informed Assessment of CANDU Safety Issues Submission from CNSC Staff		
16-M34.A	August 17, 2016	e-Docs 5056616
Information Items: Risk-informed Assessment of CANDU Safety Issues Presentation by CNSC Staff		
16-M34.1	July 18, 2016	e-Docs 5044285
Information Items: Risk-informed Assessment of CANDU Safety Issues Written submission from Michel A. Duguay		

CMD	DATE	File No.
16-M34.2	July 18, 2016	E-Docs 5045072
Information Items: Risk-informed Assessment of CANDU Safety Issues Written submission from Frank Greening		
16-M34.3	July 21, 2016	E-Docs 5046564
Information Items: Risk-informed Assessment of CANDU Safety Issues Written submission from Sunil Nijhawan		
16-M46	August 3, 2016	E-Docs 5051883
Information Items: Presentation on review of the probalistic safety assessment issues raised in an anonymous letter Submission from CNSC Staff		
16-M46.A	August 17, 2016	E-Docs 5056991
Information Items: Presentation on review of the probalistic safety assessment issues raised in an anonymous letter Presentation from CNSC Staff		
16-M30	June 20, 2016	E-Docs 4820584
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015		
16-M30.A	July 28, 2016	E-Docs 5050439
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Submission from CNSC Staff		
16-M30.B	August 18, 2016	E-Docs 5056463
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Presentation by CNSC Staff		
16-M30.C	August 18, 2016	E-Docs 5052010
Information Items: Regulatory Oversight Report for Nuclear Power Plants in Canada: 2015 Supplementary – Exercise Unified Response Action Plan Updates Presentation by CNSC Staff		
16-M30.1	July 14, 2016	E-Docs 5042310
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from Greenpeace		
16-M30.2	July 5, 2016	E-Docs 5040890
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015		

CMD	DATE	File No.
Written submission from Bruce Grey Health Centre		
16-M30.3	July 6, 2016	E-Docs 5040906
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from Municipality of Kincardine		
16-M30.4	July 8, 2016	E-Docs 5040954
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from Grey Bruce Health Services		
16-M30.5	July 11, 2016	E-Docs 5041557
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from the Town of Saugeen Shores		
16-M30.6	July 13, 2016	E-Docs 5041655
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from the County of Bruce		
16-M30.7	July 14, 2016	E-Docs 5042257
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from the Canadian Nuclear Workers' Council		
16-M30.8	July 14, 2016	E-Docs 5042270
Information Items: Regulatory Oversight Report for Canadian Nuclear Power Plants: 2015 Written submission from Power Workers' Union		
16-M31	August 2, 2016	E-Docs 5052118
Information Items: NB Power Update on the 2015 Intrepid Exercise held at the Point Lepreau Nuclear Generating Station Presentation by Énergie NP Power		
16-M45	July 29, 2016	E-Docs 5052008
Information Items: CNSC Staff update on nitric acid spill at Cameco`s Port Hope Conversion Facility on April 1, 2016 Submission from CNSC Staff		
16-M47	August 11, 2016	E-Docs 5059958
Event Initial Report: Cave Inspection Ltd.: Lost of a Radiography Exposure Device		