April 8, 2010

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held Thursday, April 8, 2010 beginning at 11:10 a.m. at the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario.

Present:

M. Binder, President
A. Graham
A. Harvey
R.J. Barriault
D.D. Tolgyesi
M. J. McDill

M. Leblanc, Secretary
J. Lavoie, Senior General Counsel
M. Young, Recording Secretary

CNSC staff advisors were: P. Elder, G. Rzentkowski, P. Webster, G. Frappier, D. Serghiuta, M. Couture, K. Lafrenière, K. Heppel-Masys, C. McDermott, J. Sigetich, J. Shiever, A. Bouchard, B. Howden, G. Schwarz, P. Thompson and M. de Vos,

Other contributors were:

- Atomic Energy of Canada Limited: G. Koroll
- Ontario Power Generation Inc: S. Woods, I. Azevedo and F. Dermarkar
- Bruce Power: M. Burton

Adoption of the Agenda

1. The revised agenda, CMD 10-M19, was adopted as presented.

Chair and Secretary

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

Constitution

3. With the notice of meeting, CMD 10-M18, having been properly given and a quorum of Commission Members being present, the meeting was declared to be properly constituted.

4. Since the meeting of the Commission held February 18, 2010, Commission Member Documents CMD 10-M18 to CMD 10-M25 were distributed to the Commission Members. These documents are further detailed in Annex A of these minutes.

Minutes of the CNSC Meeting Held February 18, 2010

5. The Commission Members approved the minutes of the February 18, 2010 Commission Meeting as presented in CMD 10-M20, with the addition of due dates for action items.

6. The Commission sought further information regarding the expected completion dates of the action items identified in the minutes. CNSC staff noted that it would provide this information to the Commission at a later date.[1]

ACTION
by
April 2010

STATUS REPORTS

Early Notification Reports

7. With reference to CMD 10-M21, the President noted that there were no early notification reports.

Updates on items from previous Commission proceedings

Atomic Energy of Canada Limited (AECL): Status Update on Whiteshell Laboratories' Quality Assurance Program and Implementation

8. With reference to CMD 10-M22 regarding the updates to items from previous Commission proceedings, CNSC staff presented information regarding AECL's Whiteshell Laboratories' quality assurance program and implementation. CNSC staff stated that the implementation of AECL's quality assurance program has improved from a 'C' rating (below requirements) to a 'B' rating (meets requirements).

9. The Commission sought further information regarding the corrective action plan that AECL had submitted and implemented. CNSC staff responded that it would provide the Commission Members with a copy of the corrective action plan. CNSC staff noted that the corrective action plan ensured that acceptable plans and procedures were in place before AECL performed the work. The Commission requested that AECL also provide documentation for the record. The Commission noted that it would return to this issue at a future meeting and requested that, in the future, CNSC staff provide the Commission with any action plans related to updates from CNSC staff.

ACTION
by
June 2010

[1] Note: CNSC staff provided the expected completion dates to the Commission by April 15, 2010

10. The Commission asked how much work had been completed in order for AECL to achieve the B rating. CNSC staff responded that AECL had two directives and six action notices to complete. CNSC staff stated that it had formally closed one directive and that the other directive was in the process of implementation.[2] CNSC staff further stated that all of the action notices were complete.

11. The Commission sought information regarding AECL's decommissioning activity steps. AECL provided information regarding the progress it has made in this regard, particularly in the areas of records control and job scope and safety analysis procedure.

Ontario Power Generation Inc. (OPG) : Darlington Nuclear Generating Station (NGS) Status Report on New Licence Conditions and 3-Year Outage Cycle

12. With reference to CMD 10-M22, CNSC staff presented information regarding the new licence conditions and three-year outage cycle at OPG's Darlington NGS. CNSC staff stated that the new licence conditions have improved regulatory oversight, and that the three-year outage schedule has been effective in reducing maintenance backlogs and supporting safe operation.

13. The Commission sought further information regarding the 69 revisions OPG made to documents referenced in Appendix A of the document entitled "Chief Nuclear Operator Expectations." CNSC staff responded that documents referenced in the Chief Nuclear Operator Expectations document were not originally written to be referenced in the licence, and that the changes were therefore not related to safety concerns. CNSC staff noted that the Chief Nuclear Operator Expectations document is being rewritten such that no further changes will be necessary.

14. The Commission inquired about any issues related to OPG's compliance with the new licence conditions. OPG stated that it has had to implement strategies in order to comply with the new conditions and that it has met the new conditions. CNSC staff concurred that OPG has not had any difficulties in complying with the new licence conditions. CNSC staff noted that the new licence conditions have improved CNSC staff's awareness of changes to OPG's programs and management structure.

[2] After the hearing, CNSC staff corrected what was said during the meeting. CNSC staff confirmed that the directive regarding the Handling and Storage of Hazardous Materials is complete, and the directive regarding Records Control is in the process of implementation.

15. The Commission asked OPG to provide information regarding the three-year outage cycle's impact on operations. OPG responded that the move from two-year outage cycles to three-year outage cycles has been beneficial with respect to reliability and improved maintenance work. OPG stated that it has also been able to reduce the total offline time. CNSC staff concurred and stated that it has no concerns regarding the three-year outage cycle.

16. The Commission asked OPG whether it has had any difficulties regarding licence condition 3.7.1, which requires that OPG submit information to CNSC staff a minimum of six months prior to a planned maintenance outage. OPG stated that it has complied with that condition without any difficulties. CNSC staff noted that it has received the appropriate submissions from OPG as necessary.

17. The Commission sought assurance that OPG would not require a further extension to licence condition 6.3, which had been extended from March 1, 2010 to December 31, 2011. OPG stated that it is on track to be compliant with the licence condition by December 31, 2011.

18. The Commission asked about OPG's organizational changes since the licence was issued in 2008. OPG stated that all of the changes have been communicated with CNSC staff. CNSC staff concurred and stated that it has no concerns regarding the management of the facility.

19. The Commission asked if there have been any changes with regards to the number of certified personnel, specifically licensed operators in the control room. OPG responded that there has been no reduction in the number of licensed operators in the control room. OPG stated that it has met, and expects to continue to meet, requirements in this area.

20. The Commission asked how the conditions in the Darlington NGS operating licence compare to the CNSC's new licence format and licence conditions handbook (LCH) that have been issued to other licensees in the time since OPG's licence for the Darlington NGS was renewed. CNSC staff responded that all of the new licence conditions in the Darlington NGS operating licence are captured in the new licence format and LCH. CNSC staff noted that the new licence format and LCH provide more clarity than the previous licence format. The Commission commented on the possibility of OPG using the new licence format. CNSC staff noted that it can begin to discuss with OPG the matter of OPG applying for the new licence format and LCH for the Darlington NGS.

OPG and Bruce Power : Progress Report on the CNSC Staff Review of a new Neutron Overpower Protection (NOP) Methodology

21. With reference to CMD 10-M22, CNSC staff presented information regarding the new NOP methodology. CNSC staff stated that the new NOP methodology is an important tool in licensees' aging management strategy. CNSC staff stated that it has been working closely with licensees and an independent expert panel to ensure a solid understanding of the new methodology. CNSC staff further stated that both the CNSC and the licensees are committed to ensuring that sufficient safety margins are maintained in 2010 and beyond. CNSC staff noted that it expects to complete the analysis by the end of 2010 and, in the interim, it has allowed licensees to use the new methodology with some compensatory measures in place.

22. OPG and Bruce Power also provided information on the matter. OPG and Bruce Power stated that they have implemented compensatory measures to ensure that safety margins are maintained. OPG and Bruce Power also stated that they are working to address recommendations raised by the independent expert panel and CNSC staff. OPG also discussed the development of a modified fuel bundle to address the effect of aging. Bruce Power noted that it is working towards reaching a formal agreement with OPG in order to work on the modified fuel bundle design.

23. The Commission sought further information regarding past "loss of regulation" events[3]. CNSC staff responded that between 1977 and 2006 there have been a total of 146 events for all of Canada's CANDU reactors. CNSC staff explained that most of these events (greater than 90%) were precursors or initiating events and not actual loss of regulation events. CNSC staff noted that there had been only three loss of regulation events and that none of the events resulted in fuel failures. CNSC staff noted that the NOP methodology will ensure that reactor systems will continue to be able to handle these events as the reactors age.

24. The Commission sought further information from the licensees in this regard. OPG explained that the reactor has a regulating system that lowers the reactor power in order to control the reactivity. OPG stated that there are various systems in place, including set back, step back and the shutdown systems, that will act depending

[3] Note: In a loss of regulation event, the ability of the Reactor Regulating System to properly regulate the neutron population in the reactor is impaired due to improper response of reactivity devices or inaccurate sensory input data. The resulting uncontrolled increase in the power generated in a reactor fuel channel has the potential to damage the fuel and the fuel channels if there is no action from the shutdown system.

on the level needed to regulate the reactor. OPG stated that a loss of reactivity event occurs when the shutdown system is required to prevent fuel defects. CNSC staff concurred with OPG and noted that there are multiple barriers in place to prevent fuel defects.

25. The Commission asked for clarification regarding the implementation of the new NOP methodology. CNSC staff stated that the new NOP methodology is being used to determine the trip setpoints (TSPs) for the reactors. CNSC staff explained that the TSPs are the points at which the shutdown systems are initiated to protect the fuel and fuel channels. CNSC staff noted that the new NOP methodology is more accurate and therefore allows the TSPs to be higher than they would have been under the previous NOP methodology, which did not take aging into account. CNSC staff assured the Commission that the new methodology is still conservative and that the safety margins for the reactors are maintained. CNSC staff also noted that the reduction in the TSP does not necessarily mean that there is a reduction in operating power.

26. The Commission asked whether the licensees are currently using the new TSPs. CNSC staff responded that the licensees are currently using the new NOP methodology to determine TSPs. OPG stated that it will begin to implement a one-percent reduction in the TSP for the Darlington NGS starting in May 2010. OPG noted that because the TSP is a function of aging, the TSP will be reduced by a further one percent per year. OPG further stated that the Pickering NGS has not required reductions in the TSP.

27. The Commission asked CNSC staff when it expects the full analysis to be complete. CNSC staff responded that it expects to complete the full analysis by the end of 2010 and that it expects to present the results to the Commission in early 2011. The Commission noted that it would like to see the differences between the new NOP methodology and the previous methodology for each NGS facility.

ACTION
by
March 2011

28. The Commission asked whether the NOP methodology will be used by other licensees (Hydro-Québec and New Brunswick Power Nuclear). CNSC staff responded that these licensees have expressed interest in the methodology but they have not chosen to implement it. CNSC staff provided information regarding the other means that these licensees have used to compensate for the effects of aging. CNSC staff further noted that adequate safety margins are being maintained.

29. CNSC staff noted that it would provide a comparison between the old methodology and the new methodology using graphs showing trip set points as a function of time in its documentation for the Commission's public hearing regarding OPG's application to renew the operating licence for the Pickering NGS A[4]. **ACTION** by May 2010

Status Report on Power Reactors

30. With reference to CMD 10-M23, which includes the Status Report on Power Reactors, CNSC staff presented updates on the following NGSs:

    - Bruce A and Bruce B;
    - Pickering A and Pickering B;
    - Darlington;
    - Gentilly-2; and
    - Point Lepreau.

31. CNSC staff provided an update regarding the Darlington NGS. CNSC staff stated that Darlington Unit 4, which was shut down for a planned maintenance on February 4, 2010, had been restarted and achieved criticality on April 4, 2010.

32. The Commission sought further information regarding the Bruce A NGS. CNSC staff responded that Units 1 and 2 were still on schedule for their planned restarts, and Unit 3 was shut down for a 59-day maintenance outage on February 24, 2010.

33. The Commission inquired regarding the refurbishment outage at Point Lepreau. CNSC staff responded that the Commission Hearing for fuel reload is planned to be held in June 2010[5].

34. The Commission asked for an update regarding the status of the alpha contamination at Bruce A, which had been discussed during the February 18, 2010 Commission meeting. CNSC staff stated that Bruce Power would be presenting a formal update at the next Commission meeting. CNSC staff stated that it and Bruce Power have been providing updates to the public via their respective Web sites and information bulletins. **ACTION** by May 2010

[4] Public Hearing Day One was held in Ottawa, Ontario on February 17, 2010 and Hearing Day Two is scheduled for May 21, 2010 at the Pickering Recreation Complex in Pickering, Ontario.
[5] Since the April 8, 2010 meeting, this hearing has been delayed to a yet-to-be-determined date

35. CNSC staff also provided information regarding the status of Bruce Power's employee dosimetry and sample testing analysis. CNSC staff noted that preliminary results have found that one employee may have received a potential alpha exposure of 44 millsieverts (mSv), meaning that, combined with other radiation exposures at work, this employee may have exceeded the regulatory limit of 50 mSv in a calendar year. CNSC staff further stated that Bruce Power has updated its radiation protection program to enhance alpha protection and is sharing lessons learned with other licensees. CNSC staff added that refurbishment work is in progress, but with restrictions.

36. The Commission asked whether all of the analysis will be complete when Bruce Power presents its findings at the May 2010 Commission meeting. Bruce Power responded that the analysis will not be complete at that time. Bruce Power noted that over 200 samples have been sent for analysis but at least 500 staff need to be tested. CNSC staff stated that the situation is well under control and that there is a good understanding of the issue.

37. The Commission asked whether contract employees will receive follow-up on this matter. Bruce Power responded that it is working with the contractors and the unions to ensure that these workers receive their dose information.

38. The Commission asked whether this event will result in any claims to the Workplace Safety and Insurance Board of Ontario. Bruce Power responded that the Ministry of Labour has been informed of the event. Bruce Power noted that, at this time, the exposure to alpha radiation does not qualify for workers' compensation because none of the workers have been injured and they can still perform work in non-radioactive work environments.

INFORMATION ITEMS

CNSC Staff's Presentation on Personnel Certification at Nuclear Power Plants

39. With reference to CMD 10-M24, CNSC staff presented information regarding personnel certification at nuclear power plants. CNSC staff provided information regarding the regulatory framework used to certify shift personnel who are assigned to positions in nuclear power plants that have a direct impact on safety. CNSC staff also provided information regarding the certification processes that define the training and testing that candidates are required to successfully complete in order to be issued a certification or to have their certification renewed.

40. The Commission asked about the conditions under which an employee who has completed the required training fails to receive certification. CNSC staff responded that the employee is required to comply with the requirements of regulatory document RD-204, *Certification of Persons Working at Nuclear Power Plants*.

41. The Commission sought clarification regarding a hypothetical employee who has been certified at multiple facilities and the ability to 'fast-track' the certification process. CNSC staff responded that all employees are required to complete the training program for the specific station at which they will be working. CNSC staff noted that there are enough differences between each of the facilities that the plant-specific training would likely have to be completed in full. OPG responded that an individual would have to demonstrate that he or she has knowledge and skills on those differences in technology before OPG would proceed with requesting certification for that individual. OPG noted that it may be possible for certain highly-skilled and knowledgeable employees to have the training period condensed.

42. The Commission asked if CNSC staff performs any compliance monitoring inspections to verify that employees meet requirements. CNSC staff stated that it evaluates licensees' training programs to ensure that they meet requirements. CNSC staff further responded that it provides oversight for examinations, although the testing of employees has been the licensees' responsibility since the responsibility was transferred in 2009. OPG stated that it has experienced examiners to oversee and participate in the examination process.

43. The Commission asked what percentage of employees at a nuclear power plant is certified. OPG responded that at the Darlington NGS, there are 93 certified staff out of approximately 2,500 employees.

44. The Commission inquired whether OPG conducts tests for employee fitness for duty. CNSC staff responded that licensees conduct an initial pre-employment testing and that regulatory document RD-204 requires that licenses have a fitness for duty program. OPG responded that it has a Continuous Behavioural Observation Program to ensure that employees are fit for duty. CNSC staff noted that it would be presenting information regarding fitness for duty around the world, including the United States, to the Commission at a future date.

ACTION
by
Fall 2010

45. The Commission sought further information regarding employee recertification. CNSC staff responded that the certification is valid for five years and employees typically apply for recertification six months prior to the expiry of the certification. CNSC staff noted that the employee would have to pass the recertification tests within the required period.

46. The Commission asked questions regarding various hypothetical scenarios where a certified employee has been removed from his or her position for a period of time. CNSC staff provided information regarding these scenarios and noted that the employee can return to his or her normal duties once the licensee is satisfied that the employee has the knowledge and skills. CNSC staff noted that if there is a deficit, the employee would receive training and have to complete the required examinations.

47. The Commission asked whether the tables included in CNSC staff's presentation demonstrating the numbers of certified personnel at each facility could be kept up to date and presented to the Commission on a regular basis. CNSC staff responded that they could.[6]

48. The Commission sought further information regarding staffing levels and the required minimum number of qualified personnel. CNSC staff noted that the minimum number is to ensure that there are sufficient qualified staff available to safely operate the facility at all times. OPG noted that certified personnel also train new certified personnel.

49. The Commission asked about medical examinations of certified or potentially certified personnel. OPG briefly described situations where an employee would undergo medical examinations.

50. The Commission asked whether OPG has any concerns regarding the age of its workforce and any potential retirements that may arise. OPG responded that it has a projection for each facility and will be moving from a 5-year staffing model to a 10-year staffing model in order to plan the hiring and training programs.

51. The Commission asked OPG if it is satisfied with the transfer of responsibility for examinations to the licensees. OPG stated that it is satisfied with the exam transfer process and with the oversight from the experienced CNSC examiners. OPG further stated that it is working with CNSC in order to ensure that the requirements of RD-204 are being met.

[6] CNSC staff confirmed after the meeting that it intends to include this information in the annual Integrated Safety Assessment of Canadian Nuclear Power Plants, beginning with the 2010 report.

52. The Commission asked CNSC staff when it would be presenting its next update to the Commission. CNSC staff responded that it would present an annual update during CNSC staff's annual Integrated Safety Assessment of Canadian Nuclear Power Plants, as well as provide an update on the exam transfer to licensees in late 2013 or early 2014, as stated in the December 11, 2008 hearing.[7]

ACTION
by September 2011 and early 2014

Presentation from CNSC Staff on Environmental Assessment and Licence to Prepare Site Decisions for New Nuclear Power Plant Projects

53. With reference to CMD 10-M25, CNSC staff presented information regarding Environmental Assessment (EA) and Licence to Prepare Site (LTPS) decisions for new nuclear power plant projects. CNSC staff stated that decisions on EAs and LTPS applications can be made based on high level plant design information from a range of reactor designs, without specifying the technology to be constructed, as long as the design information provided is credible and sufficient to properly bound the evaluations of environmental impacts and site suitability. CNSC staff explained that the design that is eventually selected for construction would have to fit within the approved bounding envelope. CNSC staff further noted that activities permitted under a LTPS where a particular technology has not been specified would be limited to site preparation activities that support the future construction of a nuclear power plant but which are independent of any specific reactor technology.

54. The Commission sought clarification regarding the bounding envelope, the technology selection and the decisions that the Commission would make for the EIS and LTPS. CNSC staff responded that the Commission would make a decision for the EIS and the LTPS based on the established bounding envelope. CNSC staff stated that once the proponent selects a technology, the proponent will be required to demonstrate that the technology fits within the approved bounding envelope before the Commission can consider issuing a Licence to Construct.

[7] Refer to the Transcript from December 11, 2008 on "Licence Amendments of all Power Reactor Operating Licences to Incorporate Regulatory Document RD-204, *Certification of Persons Working at Nuclear Power Plants*, and for Licensees to Administer Initial Certification Examinations in Accordance with CNSC Requirements and Guidelines".

55. The Commission sought further information regarding the establishment of the bounding envelope. CNSC staff responded that, in the event that multiple technologies are being considered by the proponent, the bounding envelope represents the most limiting or "worst case" design parameters from the different reactor designs under consideration. CNSC staff explained that if the EA concludes that the project, taking mitigation measures into account, will not result in significant adverse environmental effects using bounding parameters, then the EA would be acceptable for a specific reactor design that falls within the bounding envelope. Similarly, CNSC staff stated that if the site is deemed suitable to host nuclear units using bounding parameters, then the site would also be suitable for any reactor design that falls within the approved bounding envelope. CNSC staff noted that once the technology is selected, the detailed design will have to meet the applicable requirements of the *Nuclear Safety and Control Act* and its *Regulations*, as well as CNSC Guidance Document GD-369 *Guidelines for Construction Licence Applications* (to be issued later in 2010) and CNSC Regulatory Document RD-337 *Design of New Nuclear Power Plants*.

56. The Commission inquired about the inclusion of activities regarding cooling technology within the LTPS. CNSC staff responded that, as in the case for the reactor technology, the LTPS will be limited to activities that are independent of the cooling technology. CNSC staff noted that the technology would have to be selected and approved prior to certain site preparation activities. CNSC staff noted that the footprint for the facility includes all of the structures and facilities that are a part of the nuclear power plant, including the reactor, powerhouses and the cooling technology.

57. CNSC staff stated that criteria for the LTPS will be contained in a new regulatory guide, "Guidelines for Licence to Prepare Site Applications", which is expected to be released later in 2010. The Commission sought further information in this regard. CNSC staff responded that the document is a guide that is based on the CNSC's current practices regarding LTPS applications. CNSC staff noted that a draft version of this document would be available to the public by July 2010. The Commission noted that this guide would be useful in providing clarity regarding the EA and LTPS application that is currently underway for OPG's Darlington New Nuclear Power Plant Project.

ACTION
by
July 2010

58. The Commission inquired about site preparation work regarding flood protection. CNSC staff responded that there are two kinds of flood protection, one to protect from flooding during site preparation activities and the other, more permanent flood protection for the nuclear power plant, which would be dependent on the chosen technology.

Closure of the Public Meeting

59. The meeting closed at 4:46 p.m.

Recording Secretary — Date: MAY 2 8 2010

Secretary — Date: MAY 2 8 2010

APPENDIX A

CMD	DATE	File No

10-M18 2010-03-09 (6.02.01)
Notice of Meeting of April 8, 2010

10-M19 2010-03-24 (6.02.02)
Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Thursday, April 8, 2010, at the 280 Slater, Ottawa, Ontario

10-M20 2010-03-23 (6.02.03)
Approval of Minutes of Commission Meeting held February 18, 2010

10-M21 2010-03-23 (6.02.04)
Early Notification Report - No new events to report

10-M22 2010-03-23 (6.02.04)
Updates on items from previous Commission proceedings:
AECL: Status Update on Whiteshell Laboratories' Quality Assurance Program and Implementation
OPG: Darlington NGS Status Report on New Licence Conditions and 3-Year Outage Cycle
OPG and Bruce Power: Progress Report on the CNSC Staff Review of a new Neutron Overpower Protection Methodology

10-M23 2010-03-31 (6.02.04)
Status Report on Power Reactors units as of March 31, 2010

10-M24 2010-03-23 (6.02.04)
CNSC Staff's presentation on Personnel Certification at Nuclear Power Plants

10-M25 2010-03-31 (6.02.04)
Presentation from CNSC staff on Environmental Assessment and Licence to Prepare Site decisions for New Nuclear Power Plant Projects