August 19, 2010

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held Thursday, August 19, 2010 beginning at 9:04 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
S. Gingras and S. Dimitrijevic, Recording Secretaries

CNSC staff advisors were: R. Jammal, G. Rzentkowski, F. Rinfret, K. Lafrenière, P. Webster, T. Schaubel, B. Poulet and M. Couture

Other contributors were:

- Ontario Power Generation Inc.: P. Tremblay and L. Swami
- Hydro-Québec: C. Gélinas and P. Desbiens
- Bruce Power Inc.: D. Hawthorne, F. Saunders and N. Sawyer

Adoption of the Agenda

1. The revised agenda, CMD 10-M42.B, was adopted as presented.

Chair and Secretary

2. The President chaired the meeting of the Commission, assisted by M. Leblanc, Secretary and S. Gingras and S. Dimitrijevic, Recording Secretaries.

Constitution

3. With the notice of meeting, CMD 10-M41, 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 June 28 and 29, 2010, Commission Member Documents CMD 10-M41 to CMD 10-M47.1 were distributed to Members. These documents are further detailed in Annex A of these minutes.

Minutes of the CNSC Meeting Held June 28 and 29, 2010

5. The Commission Members approved the minutes of the June 28 and 29, 2010 Commission Meeting as presented in CMD 10-M43, with the following change:

   Paragraph 109 is replaced with:

   109. The Commission requested information on verification activities and **work task observations** during inspections. CNSC staff responded that administrative checks were performed, as well as **work task observations** when activities were carried on during an inspection.

6. With reference to item 68 of the draft Minutes, CNSC staff confirmed that all testing in accordance to the safety case was done, and that the NRU reactor is back into operation.

7. With reference to item 13 of the draft Minutes, the Commission asked for more information about the weekly Operational Experience (OPEX) meetings. CNSC staff responded that OPEX representatives meet weekly every Friday morning to discuss any important operational event, and that CANDU Owners Group (COG) representatives are present to report international events if necessary. OPEX staff from every Canadian licensee also has access to the International Atomic Energy Agency (IAEA) international reporting system web page.

8. With reference to item 8 and 16 of the draft Minutes, CNSC staff confirmed that the report was received on July 26, 2010, and that they will evaluate the report and provide an update to the Commission if necessary.

ACTION
(if necessary)
Report
through
Secretary

STATUS REPORTS

Early Notification Reports (ENR)

Ontario Power Generation: Pickering B Reactor Trip: Unit 8 Trip During Post-LOCA Isolation Test

9. With reference to CMD 10-M44, CNSC staff summarized the event and noted that future actions include OPG's investigation to determine the direct cause of the activation of the Emergency Coolant injection valve and the extent of the reactor condition. CNSC staff added that OPG is expected to provide to CNSC staff a detailed event report within 45 days of the event, i.e. by September 10, 2010.

10. The OPG representative concurred with CNSC staff's summary and added that the fault was associated with a failed relay that maintained the circuit armed and led to the opening of these valves when the subsequent test was carried out. The OPG representative added that the faulty relay had been repaired, the system fully tested and the unit returned to service. The OPG representative also noted that the root cause investigation will be reported to CNSC staff.

11. The Commission asked if this type of event was included in simulator training for operators. The OPG representative answered that the training program will be reviewed to determine if any changes should be done in light of the event.

12. The Commission asked if there was another system of valves, similar to this one, which could lead to a higher increase in temperature. The OPG representative answered that there are several valves with similar functions, and that a testing program is in place to validate the effectiveness and the functionality of the systems.

13. In response to the Commission's question on the precision of the expected increase of temperature to 295 degrees Celsius if the reactor had not tripped, the OPG representative explained that the analysis is available and that they could provide it to CNSC staff upon request.

Ontario Power Generation, Pickering A Nuclear Generating Station: P-2010-18530 – Unit 1 Reactor Trip

14. With reference to CMD 10-M44A, CNSC staff provided a summary of the event. CNSC staff noted that they will continue to monitor OPG's response and that they will review the detailed report when submitted.

ACTION
(if necessary)
Report
through
Secretary

15. The OPG representative commented that the unit has been repaired, confirmed operational and returned to full power. He added that the safety system, actions and operator responses to the event were as expected. Any lessons learned will be shared using the OPEX process.

16. The Commission asked if corrective training will be implemented and if the root cause analysis will include all procedures that would need to be rectified. The OPG representative confirmed that the corrective training was ongoing and that the root cause analysis would focus on two aspects: equipment liability and human performance.

17. The Commission asked if procedures exist to verify the installation of a piece of equipment. The OPG representative explained that field operators carry out these verifications, and that these activities would be part of the investigation.

Status Report on Power Reactors

18. With reference to CMD 10-M46, which includes the Status Report on Power Reactors, CNSC staff presented updates on the following:

    - For Bruce A Unit 2, 480 calandria tubes have been installed and fuel channel installation remains in progress. Unit 2 is now scheduled for fuel reload on May 1, 2011;
    - For Bruce A Unit 1, calandria cleaning work is in progress. Unit 1 is now scheduled for fuel reload on July 22, 2011;
    - For Bruce B, Unit 3 is back at full power and Unit 4 is at 88 percent of full power. Units 5 and 6 are slightly derated due to high-rate temperature;
    - For Darlington, Unit 1 is currently at 80 percent of full power.
    - For Pickering A, Unit 1 is at 14 percent of full power following the reactor trip reported in CMD 10-M44.A. Unit 4 is at 98 percent of full power; and
    - Pickering B Unit 8 is at full power.

19. CNSC staff provided further details regarding the status of refurbishment activities at Point Lepreau. CNSC staff noted that current efforts were focused on resolving the calandria tube rolled joint leak tightness. CNSC staff added that New Brunswick Power plans on providing an update to the Commission on the status of the Point Lepreau refurbishment in the fall of 2010.

20. The Commission asked for more information on the status of the refurbishment at Point Lepreau. CNSC staff explained that the nuclear industry was looking for solutions to the leak tightness issues with the calandria tubes, and that these solutions would depend on the importance of the leaks.

21. The Commission asked for the rationale behind the planned restart dates for the Bruce A stations. CNSC staff responded that these dates were based upon planned schedules and the best available knowledge. The Commission expects to be provided with more information about the exact dates and other details.

22. The Commission asked for more information on plans from Hydro-Québec for the renewal of their operating licence for their Gentilly-2 nuclear generating station. CNSC staff responded that their discussions with Hydro-Québec indicated that Hydro-Québec was planning to ask for an extension of their current licence to allow time for the completion of a hearing process for a licence renewal and more certainty on the timing of a planned refurbishment.

23. In response to a question of the Commission on the expected date of refurbishment at Gentilly-2, CNSC staff explained that the start of the refurbishment was expected to be sometime in 2012.

24. The Commission asked for more information on the issue of fuelling machines unavailability and its impact on the operation of power reactors. CNSC staff explained that this problem might be related to the ageing of fuelling machines, and that they will consult the industry and would follow up on this issue.

ACTION
Due date to be determined
Report through Secretary

INFORMATION ITEMS

CNSC Staff Integrated Safety Assessment of Canadian Nuclear Power Plants for 2009

25. With reference to CMD 10-M47, CNSC staff presented its integrated safety assessment of Canadian Nuclear Power Plants for 2009 (NPP Report). CNSC staff orally presented an overview of changes introduced to the 2009 Report, results of the public comment period, the industry results and results specific to each NPP. The component of the NPP Report related to New Brunswick Power will be provided in fall 2010, with an update on refurbishment activities.

26. In response to a question from the Commission on whether similar assessments were done by other countries, CNSC staff explained that similar reports were produced by other countries, but that the report presented to the Commission was more comprehensive. CNSC staff added that integrated safety assessment reports are highly recommended by international organizations.

27. The Commission requested CNSC staff to provide in future annual reports the results of benchmarking against NPPs outside of Canada. CNSC staff noted that they were looking at revising performance indicators and were considering adopting some internationally adopted performance indicators. The Bruce Power representative commented that, using the indices used by the World Association of Nuclear Operators (WANO), NPPs in Canada compare advantageously to those in the United States.

28. The Commission also requested CNSC staff to provide in the next NPP Report more information on how ratings are determined, including the positive and negative aspects of a program which are used in making a determination. — ACTION: In 2011 NPP Report

29. The Commission enquired on actions taken to retain expertise and on the training of workers new to the industry. CNSC staff responded that the first steps were initiated and added that they were engaging the licensees in those discussions through outlining their expectations regarding the end-of-life plans. The Bruce Power representative expressed the view that all NPP companies have been successful in attracting new graduates, and that the main challenges in the future would be knowledge management and loss of experience. The OPG representative agreed that OPG was successful in attracting qualified workers and stated that they have made a major commitment to training. Hydro-Québec indicated that the search of personnel to continue operating was an issue they have been working on for several years. Hydro-Québec added that the refurbishment project helps in retaining the available expertise.

30. The Commission asked for clarification in representation of collective dose and CNSC staff explained different ways of presenting results of dosimetry in nuclear facilities.

31. The Commission asked for more information on the frequency of the review of derived release limits (DRL). CNSC staff explained that these limits are generally verified on a five-year cycle to ensure the calculations are valid, and provided details on reasons for these verifications. CNSC staff added that the DRL for Gentilly-2 had been recently submitted. As requested by the Commission, CNSC staff stated that they will provide information to the Commission on the DRLs for Point Lepreau. — ACTION: by December 2010

32. The Commission requested CNSC staff to provide, in future documents submitted to the Commission, more details on all issues identified and their significance. The Commission also requested that, to the extent possible, the draft NPP report be revised close to the submission date to provide updates on issues described in the report.

33. The Commission asked for more information on the class 1 pipe degradations at different facilities. CNSC staff explained the significance of this performance indicator and the meaning of the "class 1 pipes". CNSC staff noted that the more conservative criteria used during the inspections done in 2009 had resulted in an increased number of findings. The OPG representative commented that the program in place for resolving the degradations issue is robust, and that the findings were properly reported.

34. With respect to degradation of equipment and ageing management, the Commission inquired about indicators of structural integrity. CNSC staff responded that periodic inspections of pressure tubes, which are done during each outage and could be presented annually, provide clear indicators of ageing.

35. The Commission asked what was the biggest concern or outstanding issue for each of the plants and what would be a reasonable timeframe for their resolution. CNSC staff cited Bruce Power as a good example, where the only concern was certified staffing and where Bruce Power had adopted a satisfactory approach to resolving the issue. CNSC staff added that the environmental qualification of equipment had been an issue with Darlington NGS, and that the progress made would be reflected in the NPP annual report for 2010. CNSC staff noted that concerns with Pickering NGS include safety culture, completion of Inter-Station Transfer Bus and the minimum complement issue, and added that they expect that all three issues would be resolved by the end of this year. The Hydro-Québec representative stated that quality assurance was the main issue at the Gentilly-2 station, and that they have started to work to resolve it this year.

36. The Commission noted that some of the indicators used in the annual report had been developed and introduced more than a decade ago and commented that there might be better ones available now. CNSC staff responded that, as part of their effort to revise standard S-99, they would take the opportunity to review the actual regulatory performance indicators. CNSC staff added that they would work closely with the industry on this review.

37. Representatives from the industry commented that the majority of monitoring parameters were well established and used, pointed out the examples of standardized measures, such as in the area of human performance, and said that maintenance and equipment reliability were their current areas of focus.

38. The Commission suggested that CNSC staff study the experience of other regulators and compare with indicators that they are using. The Commission also suggested that a more efficient and visually effective way of presenting the data to the public should be developed.

39. In light of the recent fires in Eastern Europe, the Commission sought more information on plans for actions in case of large scale forest fires in the vicinity of nuclear installations and storage sites in Canada. CNSC staff responded that fire hazard is part of the safety review which is included in the safety report update, as well as part of the probabilistic safety analysis. CNSC staff noted that there is an exclusion zone of almost a kilometre in radius surrounding every facility, which would protect a station from the direct impact of fire.

40. Referring to the study on CANDU safety issues that had started in 2007, the Commission inquired into reasons why some areas of the study, such as large loss of coolant accidents (LOCA) are not completed, and take considerably longer than other areas. CNSC staff noted that from the original 20 generic action items in the study, 14 have been resolved and closed, and stated that large LOCA is a difficult issue to resolve. CNSC staff added that some additional work and experimental studies were required, particularly an assessment of fuel behaviour under accident conditions. Representatives from the industry also noted the complexity of the issue, and pointed out that the previous analysis had to be revisited and that they had to introduce operational constraints to address new findings resulting from the study. Both CNSC staff and industry representatives stated that the length of the study and dealing with such complex issues did not affect safety of operations in power plants, since all safety margins had been adequately established.

Bruce Power

41. The Bruce Power representative provided comments on the challenges encountered by his company, the rationale behind the estimate for a date for the restart of Bruce A Units 1 and 2 and a feasibility study on a different method for the refurbishment of a NPP.

42. The Commission enquired on Bruce Power obtaining a satisfactory rating for their radiation protection program when there had been an alpha contamination event at Bruce Power. CNSC staff noted that this event occurred at the end of the year 2009, and explained that compliance with radiation protection is measured by examining all of the work permits and activities related to radiation protection for the whole year. CNSC staff considers Bruce Power to have an acceptable radiation protection program. CNSC staff indicated that some assumptions regarding protection against alpha radiation may have been incorrect and that there were lessons to be learned. The Bruce Power representative commented that nobody concluded after the review of the alpha contamination event that procedures had not been followed or that Bruce Power had not been compliant with the *Nuclear Safety Control Act* and its Regulations.

43. The Commission asked for an update on the whitefish monitoring program at the Bruce A NGS. CSNC staff explained that several studies were underway to gather appropriate data according to CNSC-approved processes and programs. The Bruce Power representative explained that the CNSC approved the details of the follow-up program during the summer of 2010 and that these studies were underway. The Bruce Power representative added that preliminary monitoring results show little effects of the operation of the NGS on the environment, but a definite conclusion will only be reached when all of the data is gathered. CNSC staff stated that they are satisfied with Bruce Power's actions at this time.

44. The Commission asked for more information on actions taken to prevent recurrence of a missed safety systems issue at Bruce A NGS. The Bruce Power representative explained that this incident had been caused by a coding problem, which has since been corrected.

45. The Commission asked for more information on a situation where an inspector from the International Atomic Energy Agency (IAEA) had been denied access to the Bruce site for a few hours. The Bruce Power representative explained that there had been confusion on the identification of the inspector, and that procedures were modified to prevent a recurrence.

46. The Commission asked for more details on issues identified by CNSC staff in Bruce Power's formal Reliability Program. CNSC staff responded that the issues identified in this report were not significant. CNSC staff added that there is a plan in place for the resolution of those issues.

47. The Commission asked Bruce Power how they manage to have such low lost-time injuries numbers. The Bruce Power representative answered that they do not have a special mechanism in place; instead, they accommodate injured employees with different duties and jobs appropriate for their conditions.

OPG: Darlington and Pickering

48. The OPG representative provided a summary of OPG's accomplishments and important decisions for the Darlington and Pickering Nuclear Generating Stations (NGS).

49. The Commission asked OPG for comments on the minimum complement numbers issue. The OPG representative explained that, working with CNSC staff and using new guidance from the industry, they had performed a discreet validation exercise which indicated that the minimum number of staff is present at all times to deal with plant designed basis events. OPG added that they will complete the validation exercise during the fall of 2010. CNSC staff concurred with the OPG representative. The Commission pointed out the length of time for resolving this issue and asked for comments. CNSC staff indicated that defining the right path for resolution took time. CNSC staff stated that if this issue is not resolved by the exercise planned in the fall, enforcement actions will be taken to resolve this issue in a timely manner.

50. The Commission asked for CNSC staff`s comments on the below expectations rating at the Darlington NPP regarding Equipment Qualification. CNSC staff indicated that OPG had been taking action to make improvements in this area and that they were compliant with the requirements stated in the CSA standard. CNSC staff expects the implementation of this program to be compliant with the CSA standard by the end of the year 2010. The OPG representative confirmed that the program field installation is planned to be completed by the end of 2010, and that measures have been taken to maintain this qualification.

51. The Commission asked for reasons why the Organization and Plant Management safety area at Pickering A has been below expectations for two years. The OPG representative explained that the principal issue associated with Pickering A was the significant vulnerabilities that the inter-station transfer bus event exposed, but that the project aiming at resolving these vulnerabilities was completed in 2010.

52. In response to a question from the Commission on the results of the installation of a fish net at the Pickering A NGS, the OPG representative indicated that preliminary results seem to show an improvement to the situation, and that more information would be provided at the December 2010 Commission Meeting. ACTION by December 2010

53. At the request of the Commission, the OPG representative provided more details on the safety culture at the Pickering A NGS. CNSC staff commented that they had reviewed the self-assessment that OPG conducted and, with the resolution of some issues, they had concluded that the safety culture at that station had improved.

54. The Commission asked about the status of the implementation of additional sirens in the Pickering area. The OPG representative responded that they work with local authorities to ensure that the programs for the installation of six additional sirens are in place by the end of this year. The Commission expressed its concerns over the fact that the installation of recommended sirens has not been completed after more that eight years due to issues related to property value. The Commission stated that it was OPG's responsibility to ensure that sirens are installed. The Commission insisted to be informed if any kind of barriers prevent the installation of sirens and stated that issuing an order remains an option. ACTION Report in December 2010

Hydro-Québec: Gentilly-2

55. The Hydro-Québec representative concurred with the information in the NPP Report for the Gentilly-2 NGS and detailed some of the improvements made by Hydro-Québec during the year 2009.

56. The Commission asked Hydro-Québec for comments regarding issues related to quality management. The Hydro-Québec representative explained that a plan had been implemented to address outgoing issues related to quality assurance, and that the

last action item should be closed by the end of 2010. The Hydro-Québec representative added that a process-based management system had been implemented. The Hydro-Québec representative further noted that they obtained from CNSC staff a better understanding of the CNSC's expectations regarding quality assurance. CNSC staff commented that Hydro-Québec would need to make further progress towards an acceptable quality assurance program to improve the rating in this area.

57. The Commission asked for reasons why the performance assurance rating for Gentilly-2 was satisfactory given the issues reported in the areas of quality management and human factors. CNSC staff responded that the program for quality assurance at Gentilly-2 is compliant with CSA standard N-286.0-02, *Overall Quality Assurance Program Requirements for Nuclear Power Plants*, and that the management structure is well established, even if there are problems related to the implementation of the program.

58. The Commission asked Hydro-Québec for reasons behind the high number of hours in guaranteed shutdown state at Gentilly-2. The Hydro-Québec representative answered that the annual shutdown had to be extended to repair seismic supports.

59. The Commission asked for comments on Hydro-Québec's request to report the completion of their equipment qualification activities to the end of the year 2012. CNSC staff indicated that the commitment from Hydro-Québec to complete the environmental qualification activities by the end of refurbishment activities still stands, despite the delays in starting these activities. CNSC staff stated that Hydro-Québec had been actively working on this project to respect this commitment. Hydro-Québec explained that they intend to submit an updated work plan to take into account the delays in starting refurbishment activities, but that the completion of equipment qualification work would probably coincide with the refurbishment work.

60. In response to comments requested by the Commission on the containment leak rate at Gentilly-2, CNSC staff explained that the current leak rate has reached repair criteria set by Hydro-Québec, which is not a regulatory criteria. Hydro-Québec noted that the location of important leaks had been identified and that the leaks will be repaired during refurbishment.

61. The Commission asked about the intentions of Hydro-Québec regarding the future of the Gentilly-2 facility, noting that the operating licence for Gentilly-2 expires shortly. The Hydro-Québec representative responded that the operating licence was valid until December 31, 2010 and that they had prepared the application for licence renewal. However, delays with the refurbishment project necessitate additional preparation and changes to be introduced in the material prepared in support of the application.

62. The Commission further asked Hydro-Québec about their plans and a more precise timeline regarding refurbishment. The Hydro-Québec representative responded that it was too soon to give an exact date for the beginning of the refurbishment work due to the complexity of critical operations and stated that, in the meantime, Hydro-Québec would focus on improving safety operation of the plant.

63. The Commission inquired on the limits for extended operation of the station. The Hydro-Québec representative responded that the end-of-life has been estimated to be in 2013 and added that, at the end of 2011, the plant would be inspected to ensure that it could continue to operate for another year. CNSC staff added that the problems identified in the submitted CMD need to be resolved, and that the hypothetical life should be reached by 2013.

64. The Commission sought more information about certification of personnel at the Gentilly-2 station and asked if the procedure applies to technical staff and/or to supervisors. The Hydro-Québec representative responded that the process applies to certified personnel, and added that there is a training program for supervisors and other plant managers which does not include an exam overseen by the CNSC. The Commission expressed concerns that human factors and problems in quality management or lack of conformity with procedures and guidelines could stem from a lack of appropriate certification procedures and exams for supervisors and other plant managers. The Hydro-Québec representative explained that, in order to prevent the mentioned problems, they have introduced training for supervisors as part of their quality management improvements. Hydro-Québec has also planned a high-level management coaching in the fall of 2010.

65. The Commission considered submitted security assessments in a closed session.

Closure of the Public Meeting

66. The public portion of the meeting closed at 3:37 p.m.

Sophie Gregoris — 2010-10-06
Recording Secretary — Date

St. Dimitrijević — 2010/10/06.
Recording Secretary — Date

M L — 6/10/10
Secretary — Date

APPENDIX A

CMD DATE File No

10-M41 2010-06-15 (Edocs 3561522)
Notice of Meeting of August 19, 2010

10-M42 2010-07-19 (Edocs 3578598)
Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Thursday, August 19, 2010, at 280 Slater, Ottawa, Onatio.

10-M42.A 2010-08-05 (Edocs 3591316)
Updated Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Thursday, August 19, 2010, at 280 Slater, Ottawa, Onatio.

10-M42.B 2010-08-17 (Edocs 3595999)
Updated Agenda of the meeting of the Canadian Nuclear Safety Commission to be held on Thursday, August 19, 2010, at 280 Slater, Ottawa, Onatio.

10-M43 2010-08-03 (Edocs 3595797)
Approval of Minutes of Commission Meeting held June 28 and 29, 2010

10-M44 2010-07-27 (Edocs 3586802)
Early Notification Report:
Ontario Power Generation Inc.: Pickering B Nuclear Generating Station: Reactor Trip: Unit 8 Trip during Post LOCA Isolation Test

10-M44.A 2010-08-17 (Edocs 3596048)
Early Notification Report:
Ontario Power Generation Inc.: Pickering A Nuclear Generating Station: P-2010-18530 – Unit 1 Reactor Trip

10-M45 2010-08-03 (Edocs 3592047)
Updates on items from previous Commission proceedings:
No updates to report at this meeting

10-M46 2010-08-11 (Edocs 3593382)
Status Report on Power Reactors units as of August 11, 2010

10-M47 2010-06-11 (Edocs 3558930/3558934)
CNSC Staff Integrated Safety Assessment of Canadian Nuclear Power Plants for 2009 – oral presentation by CNSC staff

10-M47.A 2010-07-14 (Edocs 3553548)
CNSC Staff Integrated Safety Assessment of Canadian Nuclear Power Plants for 2009 – Site Security Assessment - Contains prescribed security information and is not publicly available

10-M47.1 2010-07-16 (Edocs 3578133)
CNSC Staff Integrated Safety Assessment of Canadian Nuclear Power Plants for 2009 – Written submission from Eugene Bourgeois