

April 10, 2003

Minutes of the Canadian Nuclear Safety Commission (CNSC) Meeting held Thursday, April 10, 2003, beginning at 3:00 p.m. in the Public Hearing Room, CNSC Offices, 280 Slater Street, Ottawa, Ontario.

Present:

L.J. Keen, Chair

C.R. Barnes

J.A. Dosman

Y.M. Giroux

A. Graham

M.J. McDill

M.A. Leblanc, Secretary

I. V. Gendron, Senior Counsel

C.N. Taylor, Recording Secretary

CNSC staff advisers were J. Blyth, C. Maloney, P. Thompson, T. Viglasky, R. McCabe and R. Jammal.

#### Adoption of the Agenda

1. The agenda, CMD 03-M20, was adopted as presented.

**DECISION**

#### Chair and Secretary

2. The President took the Chair and the Secretary of the Commission acted as Secretary of the meeting with C.N. Taylor acting as recording secretary.

#### Constitution

3. With the notice of meeting having been properly given and a quorum of Members being present, the meeting was declared to be properly constituted.
4. Since the meeting of the CNSC held February 26, 2003, Commission Member Documents CMD 03-M19 to CMD 03-M24 had been distributed to Members. These documents are further detailed in Annex A of these minutes.

Minutes of the CNSC Meeting Held February 26, 2003

5. The Members approved the minutes of the February 26, 2003 Commission meeting (reference CMD 03-M21) without change.

In response to the Members' questions in regard to the items described in paragraphs 19 and 25 of the Minutes, staff indicated that, while progress is being made, there was nothing to report at this time.

**DECISION**Significant Development Report

6. Significant Development Report (SDR) no. 2003-3 (CMD 03-M22 and CMD 03-M22.A) was submitted by staff. Staff reported on the following with reference to the SDR.

Decommissioning Plans and Financial Guarantees for Point Lepreau and Gently-2 NGSs

7. With reference to CMD 03-H22, staff reported that, at the suggestion of CNSC staff, NB Power and Hydro-Quebec had applied for licence amendments that would extend the date for establishment of decommissioning financial guarantees for the Point Lepreau and Gently-2 NGSs. The deadline set in the licences was March 31, 2003. Staff indicated its acceptance of the proposed extensions.

Eagle Point Mine Ground-fall Status Report

8. With reference to CMD 03-H22.A, staff updated the Members on the status of a ground-fall incident that occurred at Cameco's Eagle Point Mine on December 16, 2002. No further action on this matter has been requested by Staff or Saskatchewan Labour. A further update will be provided at the time of the relicensing hearing for the Rabbit Lake Mine operation scheduled to begin in June 2003.

Cameco McArthur River Mine – Groundwater Ingress Problem

9. Staff reported on a recent development at the McArthur River Mine in Saskatchewan that occurred after the above-referenced SDR was prepared. Mr. J. Jarrell of Cameco Corporation provided a brief presentation on the event and responded to the Members questions during the meeting.

10. Mr. Jarrell (Cameco) explained that the event began on the morning of April 6, 2003 with a fall of ground in a drift being developed to expand the ground freeze curtain operations. Freezing of the ground is used for stabilization and to control water ingress to the mine. With the fall of ground came a flow of water into the mine. The volume of water has stabilized at approximately 450 and 550 cubic metres per hour.
11. Cameco noted that, in addition to attempting to stem the ingress of water, the main issue is to control the radiation doses to the workers exposed to the radon-rich water.
12. Cameco outlined the approach being taken to stop the flow, including the construction of a concrete bulkhead and plug with temporary drainage piping. Cameco noted that it will take approximately two weeks to construct the bulkhead and plug (covering about 10 metres along the drift and consisting of approximately 300 cubic metres of concrete). The concrete must first be allowed to cure so that it can safely withstand the hydrostatic pressure that it will be required to bear when the flow of water through the bulkhead is throttled back. In response to a question from the Members, Cameco stated that this is a proven mine engineering technique for addressing this type of problem.
13. With respect to current water levels in the mine, Cameco reported that, despite the addition of available contingency pumping capacity, more water is entering the mine than can be evacuated to the surface.
14. Cameco identified a number of key regulatory issues regarding this event:
  - bulkhead design;
  - mine pumping contingencies;
  - radiation protection contingencies;
  - water treatment plant capacity contingencies; and
  - water polishing pond capacity contingencies.

A larger polishing pond capacity will be required in the event that it becomes necessary to regulate the off-site discharge to protect spring fish spawning near the mine site.

15. In response to the Members' questions on the above-noted issues, Cameco and CNSC staff noted that the resolution of all of the issues will require close collaboration between the CNSC, Saskatchewan Labour, Saskatchewan Environment, as well as Environment Canada and Fisheries and Oceans Canada.

16. With respect to this collaboration, staff noted that Saskatchewan Labour is taking the lead on the conventional health and safety issues, while the CNSC is taking the lead role in radiation protection. In this regard, staff reported that, to date, Cameco has made adequate provisions for the protection of the workers from both radiological and conventional hazards.
17. In response to follow-up questions from the Members on worker safety, Cameco stated that it has responded in a conservative manner to ensure the safety of workers and that, while radiation exposures have increased for some workers, the doses have been modest and within the regulatory limits. Extra monitoring equipment and radiation protection personnel have been deployed to address the situation. Staff confirmed the worker dose information and noted that approximately 20 workers have received doses of about 1 mSv/week; the highest individual dose has been 4 mSv (the regulatory limit is 50 mSv/year).
18. With respect to environmental protection, staff noted that, to date, the excess water is being adequately handled by the existing treatment facilities and storage ponds. However, in anticipation of a need for increased capacity, CNSC staff has authorized Cameco to prepare an emergency containment dyke on the surface. The details of the proposal have not yet been received by staff. In response to a question from the Members on this proposed new surface impoundment, Cameco stated that, at this time, the dyke will be built only as a precaution, and that if needed, it could hold approximately 60,000 to 70,000 cubic metres of water.
19. With reference to the estimated shortfall in treatment capacity, and the limited capacity of the new polishing pond, the Members questioned Cameco as to whether the capacity of the new pond would provide enough time to address the problem. In response, Cameco stated that, by restarting the primary treatment plant, it can get the water treatment throughput up to more than 650 cubic metres per hour, and possibly up to between 700 and 800 cubic metres per hour (the nominal design capacity of the treatment plant is 450 cubic metres per hour). This would allow Cameco to keep up with the current surcharge for a reasonably long period of time. Cameco also noted that the volume of the flow into the mine has reduced slightly, and that the amount of suspended solids in the water has significantly improved since the early days of the event. This will reduce some of the anticipated load on the treatment and storage system.

20. In response to questions about the potential additive effect of the spring melt on the storage pond capacities, Cameco stated that this is being considered in discussions with the various regulatory agencies and in the design of the contingency measures. It was noted that the spring melt is now just beginning and that peak flow can be expected in mid-May.
21. In response to questions about the original cause of the water ingress to the mine, Cameco acknowledged that groundwater has always been a key technical challenge in the design of the McArthur River mine (e.g., the need for the freeze curtain mining method). A root-cause analysis of this particular problem, however, has not yet been completed.
22. In response to a question about how the ingress of water could affect the freeze curtain elsewhere in the mine, Cameco stated that, while it does not believe the integrity of the freeze curtain is at risk, Cameco remains uncertain about whether flooding will occur in the neighbouring area of the mine when the repair bulkhead is pressurized.
23. The Members requested that staff keep the Commission informed of developments on this problem at McArthur River mine.

**ACTION**

**Emergency Core Cooling System Check Valve at Bruce 'A' and 'B' NGS**

24. With reference to CMD 03-M22, staff reported the discovery of problems with the testing mechanisms on some check valves in the Bruce 'A' *Emergency Core Cooling System* (ECCS). The test mechanism was found to be interfering with the movement of the valve, resulting in reduced flow in the system when operating in the recovery mode. The 6 similar valves at the operating Bruce 'B' NGS were subsequently examined by Bruce Power and 3 were found to have the same problem.
25. Staff stated that, following its assessment of the situation, it has concluded that the operation of Bruce 'B' was, and continues to be safe, despite a slight reduction in the reliability of the ECCS. The Bruce 'A' NGS is in an extended shutdown and thus an immediate safety issue did not arise at that station. Staff also stated its satisfaction with the decisions and corrective actions taken by Bruce Power, including its engagement of AECL in developing alternative means of testing the operation of the valves.

26. Staff further reported that it has contacted all other power reactor licensees to confirm their awareness of the problem identified at the Bruce NGS. From those contacts, staff reported that check valve operations at the other stations are not impaired due primarily to different test procedures employed at the other stations. Staff were not aware if the procedures used at the other stations had been shared earlier across the industry.

#### Unplanned Shutdown of Unit 8 – Pickering NGS B

27. Staff reported that Unit 8 at Pickering NGS ‘B’ was automatically shutdown as a result of an error made by OPG Control Maintenance staff on March 11, 2003. The reactor was tripped when the wrong fuse was pulled from an electrical panel causing a loss of boiler level control. The unit shut down safely as designed.
28. Mr. G. Grant of OPG provided a detailed description of the events leading up to this slowly evolving transient and eventual reactor shutdown. Mr. Grant confirmed that the event posed no increased risk to workers at the plant.
29. OPG stated that, in response, it stood down the maintenance organization to ensure everyone was thoroughly briefed on the incident and that corrective actions were initiated. Corrective actions being examined include greater supervision on tasks that could involve de-energizing equipment, additional training, revision of the written instructions, and improved electrical panel labeling for human factors.
30. The Members noted that OPG as an organization must share the responsibility for the incident due to what appears to be a lack of requirements for appropriate work planning and preparation for this type of work (i.e., responsibility should not rest solely with the maintenance workers involved). OPG concurred with the Members and provided assurances that all contributing factors to the error are being examined.
31. In response to further comments from the Members about the likely contribution of the panel design and appearance to the human factors in cause of the event. OPG indicated that a human factors specialist has been engaged to provide advice on the design, appearance and labeling of the panels. The Members encouraged OPG to proceed as quickly as possible with this work to prevent recurrence.

### Unplanned Shutdown of Units 5 and 6 – Pickering ‘B’

32. With reference to CMD 03-M22, staff reported that OPG shut down units 5 and 6 at Pickering ‘B’ (Units 7 and 8 were already in a shutdown state for other reasons) to effect repairs to a small leak in the demineralized water header at Unit 5. Staff reported that the shut down was carried out in an orderly fashion and at no time was the safety of persons or the environment at increased risk.
33. The Commission noted that, for commercial reasons, OPG did not release certain information about this shutdown to the public. The Commission indicated that it is looking closely at the issues of information availability to the public in these situations and will strive to strike an appropriate balance between the public interests in health and safety and the needs of the operators.
34. While not reported in the SDR, staff further reported that shortly after Unit 6 at Pickering ‘B’ was returned to power operation, it was again shutdown to correct a problem with the fuelling machine.

### Other Recent Significant Events

35. Staff reported on the following additional items which also occurred after publication of the SDR (CMD 03-M22.A):
  - refueling at Bruce ‘A’ Unit 4 is now complete; and
  - the New Brunswick Legislature completed third reading of the proposed Electricity Act (Bill 30) which will allow for the restructuring of New Brunswick Power Inc.

The Members noted that the restructuring of New Brunswick Power was the subject of a Commission Panel licensing hearing held on March 26, 2003.

### Tritium Contamination at MDS (Canada) Inc. Research Laboratories

36. Staff reported that, on March 14, 2003, MDS reported to the CNSC the discovery of tritium contamination in one of its buildings in Ville St-Laurent, Quebec. CNSC staff further reported that it subsequently issued an Order (as amended) for further evaluations and corrective actions, including for bioassays of potentially affected workers.

37. Representatives of MDS provided further information on the results of the investigations and bioanalyses conducted thus far. MDS reported that three employees were found to have contamination in their bodies, but at levels well within the legal limits.
38. In response to follow-up questions from the Members, MDS provided further information on the contamination and human dose assessment strategy (including sampling on the surrounding property, and in the vehicles and homes of the contaminated workers). MDS assured the Members that the affected persons were receiving the appropriate health information and counseling. All staff in the affected building has also received information about the event and potential risks.
39. With respect to the Members' questions on the precise timing and cause of the spill in the research lab, MDS stated that this has not yet been determined. While the rest of the building has been decontaminated, the plan and procedure for addressing the affected room is still in development. The exact cause of the spill will not be known until that room is thoroughly examined.

#### Overexposure of a Transport Courier

40. With reference to CMD 03-M22, staff provided an update to a reported overexposure of a part-time employee of Federal Express who handles packages at Draximage Inc. Following its investigation, staff concluded that, while the employee's dosimeter recorded a dose marginally in excess of the annual limit for a Nuclear Energy Worker (i.e., greater than 50 mSv/year), it is unlikely the dose was received from handling of packages at Draximage. No other explanation for the recorded dose could be identified. Staff stated that, as a precaution, the affected employee will be designated as a Nuclear Energy Worker and the recorded dose will remain on the individual's dose history. With that, staff considers the matter closed.
41. In response to a follow-up question from the Members, staff briefly outlined the safety precautions inherent in the design of CNSC-approved transport packages for radioactive materials. Staff indicated that, although it does not believe the dose in question came from the packages handled, it is reexamining the transport package design requirements and is in the process of developing a plan for the implementation of radiation protection programs for these types of carriers. Staff will provide the Members with an update on this initiative at the June 2003 Commission Meeting.

**ACTION**

#### Loss of Well-logging Source in Northern Alberta/Saskatchewan

42. As a follow-up to an earlier SDR described in the Minutes of the February 26, 2003 Commission meeting (paragraphs 10 to 15), staff reported that there is no new information on this incident and that the matter is now considered closed.

#### Stolen X-Ray Fluorescence Analyzer Recovery

43. With reference to an earlier SDR described in the Minutes of the Commission Meeting held on February 26, 2003 (paragraph 9), staff reported that the device that was reported stolen on February 4, 2003 has been found, declared free of any damage and returned to operation by its owner.

#### Extension of the Exemption from the Class II Nuclear Facilities and Prescribed Equipment Regulations

44. With reference to CMD 03-M23, staff reviewed the rationale that the Commission used in granting the existing exemptions for certain particle accelerators to subsections 15(2), 15(3) and 15(9)(c) of the *Class II Nuclear Facilities and Prescribed Equipment Regulations*. The exemptions are scheduled to expire on May 31, 2003. Staff indicated that the reasons for the exemptions remain valid and recommended that the Commission approve an extension to the exemptions until May 31, 2006. Staff stated its intent to incorporate the exemptions into amendments to the regulations. The time frame recommended for the extension will allow for the planned amendments to be included with several other proposed amendments to the regulations.
45. With reference to the dose rates that may occur in the vicinity of the subject equipment, the Members sought clarification from staff on the worker exposures likely to occur annually. In response, staff stated that workers would not be exposed routinely to the noted radiation fields and reported that the actual dosimetry records of the workers at the subject facilities have been close to the limits of detection of the dosimeters. Dosimetry records will continue to be maintained for workers in these facilities, so any unusual trend can be promptly acted upon as necessary.
46. Following its deliberation in camera on the proposed exemption, the Commission concluded that, with reference to section 11 of the *General Nuclear Safety and Control Regulations*, the proposed extension of the exemption to subsections 15(2), 15(3) and 15(9)(c)

of the *Class II Nuclear Facilities and Prescribed Equipment Regulations*, as proposed in CMD 03-M23, would not pose an unreasonable risk to the environment, the health and safety of persons or national security, and would not result in a failure to achieve conformity with measures of control and international obligations to which Canada has agreed.

Therefore, the Canadian Nuclear Safety Commission, pursuant to section 7 of the *Nuclear Safety and Control Act*, exempts from subsections 15(2) and 15(3), and paragraph 15(9)(c) of the *Class II Nuclear Facilities and Prescribed Equipment Regulations*, licensees who operate Class II Nuclear Facilities that meet the criteria set out in CMD 03-M23 and summarized in Annex B to these Meeting Minutes. The exemption is valid until May 31, 2006.

## **DECISION**

### **Status Report on Power Reactors**

47. With reference to CMD 03-M24, staff presented its regular Status Report on Power Reactors.
48. With respect to the planned restart of Bruce 'A' NGS Units 3 and 4, staff added that the fuelling operations at Unit 4 is now complete and that 26 of the 55 licence condition prerequisites for removal of the guaranteed shutdown state have been met for Unit 4. The project remains generally on the schedule previously set out by Bruce Power Inc.
49. Staff also added that, since the submission of CMD 03-M24, Bruce 'B' NGS Unit 5 is now in a planned outage. Staff noted that it will be closely monitoring the use of start-up instrumentation on this Unit in light of problems with that instrumentation reported at the Commission Meeting on February 26, 2003.
50. Furthermore, staff noted that Unit 5 at Pickering remains shutdown and that Unit 6 at that station will be shutdown in the near future to address a fuelling machine problem. Only Unit 8 at Pickering is currently operating at full power.
51. With respect to progress on the Pickering 'A' Return-to-Service Project, staff reported that very few prerequisites remain before the guaranteed shutdown state on Unit 4 can be removed by the Designated Officer.

52. The Members remarked on a recent report in the media indicating that an operator at the Point Lepreau NGS may have been disciplined for an error. Staff agreed to follow-up on this for the Commission.

**ACTION**

**Closure of the Public Meeting**

53. The public portion of the meeting closed at 5:05 p.m. and the Commission moved in-camera to consider its decisions.

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*Chair*

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*Recording Secretary*

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*Secretary*

ANNEX A

CMD	DATE	File No
03-M19	2003-03-10	(1-3-1-5)
Notice of Meeting held on Thursday, April 10, 2003 in Ottawa		
03-M20	2003-03-26	(1-3-1-5)
Agenda of the meeting of the Canadian Nuclear Safety Commission (CNSC) held in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario, on Thursday, April 10, 2003		
03-M20.A	2003-04-04	(1-3-1-5)
Revised Agenda of the meeting of the Canadian Nuclear Safety Commission (CNSC) held in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario, on Thursday, April 10, 2003		
03-M20.B	2003-04-08	(1-3-1-5)
Revised Agenda of the meeting of the Canadian Nuclear Safety Commission (CNSC) held in the Public Hearing Room, 14th floor, 280 Slater Street, Ottawa, Ontario, on Thursday, April 10, 2003		
03-M21	2003-03-25	(1-3-1-5)
Approval of minutes of Commission meeting held February 26, 2003		
03-M22	2003-03-21	(1-3-1-5)
Significant Development Report no. 2003-3		
03-M22.A	2003-03-27	(1-3-1-5, 22-C1-126-1)
Significant Development Report no. 2003-3 - Supplementary Information		
03-M23	2003-03-25	(1-3-1-5, 29-1-0-0-0)
Exemption for Licensees of Operating Class II Facilities Comprising Particle Accelerators		
03-M24	2003-03-25	(1-3-1-5)
Status Report on Power Reactors units for the period of 2003-02-10 to 2003-03-24		

## ANNEX B – EXEMPTION

Canadian Nuclear Safety Commission, pursuant to section 7 of the *Nuclear Safety and Control Act*, exempts from subsections 15(2), 15(3) and 15(9)(c) of the *Class II Nuclear Facilities and Prescribed Equipment Regulations*, licensees who operate Class II Nuclear Facilities that meet the following criteria:

The facility must be comprised of a particle accelerator and meet at least one of the following criteria:

### Criterion 1

- 1) The dose rate at 30 centimetres from the Class II prescribed equipment must not be greater than 200  $\mu\text{Sv/h}$  when the equipment is being operated in the manner which produces the maximum dose rate as limited either by the equipment characteristics or by interlocks, and;
- 2) The room in which the Class II prescribed equipment is located is normally locked and can only be unlocked and accessed by persons who have been authorized by the licensee.

### Criterion 2

The dose rate at 30 centimetres from the Class II prescribed equipment must not be greater than 25  $\mu\text{Sv/h}$  when the equipment is being operated in the manner which produces the maximum dose rate as limited either by the equipment characteristics or by interlocks.

### Criterion 3

The Class II prescribed equipment cannot be accessed during operation because the shielding physically prevents access to any area in which the dose rate exceeds 10  $\mu\text{Sv/h}$ .

The exemption is valid until May 31, 2006.

