Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant	Cameco Corporation
Subject	Application for the Renewal of the Operating Licence for Cameco Fuel Manufacturing Inc. in Port Hope, Ontario
Public Hearing Dates	November 3, 2011 and January 18-19, 2012

Canada

RECORD OF PROCEEDINGS

Applicant:	Cameco Corporation
Address/Location:	2121-11th Street West, Saskatoon, Saskatchewan S7M 1J3
Purpose:	Application for the renewal of the operating licence for Cameco Fuel Manufacturing Inc. in Port Hope, Ontario
Application received:	April 15, 2011
Dates of public hearing:	November 3, 2011 and January 18-19, 2012
Location:	Day 1: Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario Day 2: Town Park Recreation Centre, 62 McCaul Street, Port Hope, Ontario
Members present:	M. Binder, Chair R. J. Barriault — M. J. McDill A. Harvey — D.D. Tolgyesi
Secretary:	M.A. Leblanc
Recording Secretary:	S. Gingras
General Counsel:	L. Thiele

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Licence: Renewed

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Introduction

1. Cameco Corporation (Cameco) has applied to the Canadian Nuclear Safety Commission[1] (CNSC) for the renewal of the operating licence for its Fuel Manufacturing Facility located in Port Hope, Ontario. The current operating licence, FFOL-3641.2/2012, expires on February 29, 2012. Cameco has applied for the renewal of this licence for a period of 10 years.

2. The fuel fabrication facility in Port Hope has been manufacturing commercial fuel bundles since 1965. This facility was acquired by Cameco in 2006 and renamed as Cameco Fuel Manufacturing Inc. (CFM) in 2008. The current licence authorizes Cameco to manufacture fuel bundles containing uranium dioxide pellets for use as nuclear fuel, primarily in CANDU reactors.

3. In addition to the request for licence renewal, CFM has proposed a revised financial guarantee for the future decommissioning of the facility, and CNSC staff recommends its acceptance by the Commission.

4. CNSC staff recommends a new licence format with a Licence Conditions Handbook (LCH), which describes the compliance verification criteria.

Issue

5. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*[2] (NSCA):

   a) if Cameco is qualified to carry on the activity that the licence would authorize; and

   b) if, in carrying on that activity, Cameco would make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Public Hearing

6. The Commission, in making its decision, considered information presented for a public hearing held on November 3, 2011 in Ottawa, Ontario and on January 18 and 19, 2012 in Port Hope, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*[3]. During the public hearing, the Commission considered written submissions and heard oral presentations from

[1] The *Canadian Nuclear Safety Commission* is referred to as the "CNSC" when referring to the organization and its staff in general, and as the "Commission" when referring to the tribunal component.
[2] Statutes of Canada (S.C.) 1997, chapter (c.) 9.
[3] Statutory Orders and Regulations (SOR)/2000-211.

CNSC staff (CMD 11-H17, CMD 11-H17.A, and CMD 11-H17.B) and Cameco (CMD 11-H17.1, CMD 11-H17.1A, CMD 11-H17.1B and CMD 11-H17.1C). The Commission also considered oral and written submissions from 48 intervenors (see Appendix A for a detailed list of interventions). Representatives from the Ontario Ministry of the Environment, Emergency Management Ontario and the Office of the Fire Marshall were also available for questions.

Decision

7. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*, the Commission concludes that Cameco is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that Cameco, in carrying on that activity, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. Therefore,

> the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews Cameco Corporation's Nuclear Fuel Facility Operating Licence for its Fuel Manufacturing Facility located in Port Hope, Ontario. The renewed licence, FFOL-3641.00/2022, is valid from March 1st, 2012 to February 28th, 2022.

8. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 11-H17, with the following modifications:

9.
- The expiry date of the licence is changed to February 28, 2022.
- Licence condition 4.4 is removed.
- CNSC staff shall include in the LCH the requirement for Cameco to request approval from CNSC staff before possessing enriched uranium in a quantity above 0.8 standard critical mass.

10. The Commission delegates approval authority as described in the draft Licence Conditions Handbook that was submitted as attachment to CMD 11-H17.

11. The Commission directs CNSC staff to prepare an annual industry report, including data on the performance of Cameco at CFM. The Commission also directs Cameco to prepare a status report on the safety performance of its facility approximately at midpoint of the 10-year licence term. The Commission requests that CNSC staff also prepare a report on the results of compliance activities carried out during the first half of the licence term and on the licensee's performance during that period. Cameco and CNSC staff shall present their reports at a public proceeding of the Commission, in the community of Port Hope.

Issues and Commission Findings

12. In making its licensing decision, the Commission considered a number of issues relating to Cameco's qualification to carry out the proposed activities and the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.

Management System

13. Cameco reported that a consistent approach of management systems is used across the operations to ensure a clean, safe and reliable operation of the facility. Cameco added that the application of the quality requirements is scaled according to the safety significance of a particular activity, and that a formal change management process was also introduced during the current licence period to improve the manner in which Cameco introduces and manages initiatives.

14. Cameco reported that they were working on registering the facility to the ISO 14001:2004 Environmental Management System, and that CFM maintains its registration to the ISO 9001:2008 Quality Management System Requirements Standard. Cameco reported that a recent surveillance audit in June 2011 found no major non-compliances.

15. Cameco reported that its new Integrated Management System (IMS) manual has been designed to meet the requirements in the *Class I Nuclear Facilities Regulations*[4] for a quality assurance program. CNSC staff confirmed that Cameco has submitted this IMS, which includes radiation, environmental and quality assurance programs, as well as the ISO suite of standards. The IMS was under review by CNSC staff.

16. Cameco noted that, as part of the management system program, it conducts audits to assess the conformance of these management systems. An independent third-party expert conducts compliance audits in the areas of health, safety, environmental, and radiation protection legislation. Cameco's corporate office performs periodic audits as well.

17. Several intervenors who are working or have worked at CFM expressed the view that the management system is taken seriously at CFM, with policies and procedures being followed. The Port Hope and District Chamber of Commerce noted that Cameco received the Manufacturing Excellence Award in 2010. The Municipality of Port Hope commended the positive improvements regarding quality management at CFM.

[4] SOR/ 2000-204

18. In its intervention, the Canadian Nuclear Association (CNA) expressed the view that Cameco's commitment to continuous improvement is embedded into the ISO 14001:2004 Environmental Management System that they work to conform to. In response to further information requested by the Commission, the CNA representative explained that this standard allows for companies to establish targets for improving environmental performance, which is beyond legislative requirements. The implementation of this standard is regularly audited. The Cameco representative concurred with the CNA representative, and noted that there are annual audits and recertification every three years.

19. Cameco reported that, during the current licensing period, it has undertaken a variety of actions to strength the safety culture and to improve accountability and oversight. Cameco also noted that a third-party safety culture concluded that the commitment to safety is strong at all levels at CFM. Cameco stated that the management team meets regularly to continue to build and strengthen their leadership skills through team building and leadership development activities.

20. Cameco noted that its Corrective Action Process (CAP) and Incident Reporting System (CIRS) were implemented. CAP is a process which identifies how near-misses and events are classified, investigated and addressed through corrective actions. CIRS is a database for documenting incidents, accidents, non-conformances and related events.

21. CSNC staff reported having reviewed the CIRS during on-site inspections, and stated that, while it considers the implementation of the new system to be an improvement, the investigation of root causes and the completion of corrective action plans need strengthening. CNSC staff will continue to monitor Cameco's progress in this regard.

22. Cameco stated that its reporting culture has improved since the implementation of the CIRS, with more reporting of events noted (mostly minor). Cameco has joined the CANDU Owners's Group (COG), and is working through other national and international nuclear organizations to share experiences.

23. Cameco reported continuing to improve the management of contractors on-site, by implementing a contractor management program which applies quality principles to the management and oversight of contractors.

24. Cameco reported that findings from the Type I inspection[5] in December 2007 have been addressed with the exception of Design Control. Cameco is working on a new management system procedure for this process. In the interim, robust change control and project management system procedures have been used to identify and manage design changes. CNSC staff reported that two items from the December 2007 inspection remained open, one being related to the design control program and the other one to the maintenance program. CNSC staff added that Cameco declared one action item to be completed, and the other is planned to be completed by February 2012. CNSC staff noted having made two visits to CFM to verify the implementation of the corrective actions. CNSC staff stated that delays of the implementation were due to the change in ownership of the facility.

[5] A Type I inspection is an audit of a specific area of a facility, this time of Cameco's management system.

25. CNSC staff plans on performing another inspection in March 2012 to verify that the corrective actions have been implemented since their last visit, and that the implementation of the new integrated management program and procedures has occurred.

26. Based on the information provided, the Commission is of the opinion that Cameco has an adequate management system in place to provide proper protection to the health and safety of persons, the environment and national security.

Human Performance Management

Staffing

27. Cameco reported that a range of programs is in place to ensure that the employees are fit for duty, and that a workforce and succession planning process was initiated in 2012, in conjunction with Cameco's corporate human resources talent management function.

28. CNSC staff noted that they consider Cameco's performance in this area to be satisfactory. CNSC staff stated that, while Cameco does not require a minimum staffing level for production employees, it has put in place a minimum staffing level for security and emergency response at the facility.

Training

29. Cameco reported working on a corporate-wide multi-year initiative to implement a standardized training system across all of its operations.

30. CNSC staff reported that any findings regarding training that were found during an inspection conducted in March 2010 have been corrected by Cameco. CNSC staff stated that they will continue to monitor the implementation and the maintenance of the training programs through the regulatory compliance activities.

31. CNSC staff considers Cameco's performance in this area to be satisfactory.

Conclusion on Human Performance Management

32. Based on the information provided, the Commission concludes that Cameco has in place the necessary programs in the areas of human performance to assure continued adequate performance at the facility.

Operating Performance

33. Cameco noted that operating performance is tracked using a comprehensive set of key performance indicators and objectives that are reviewed internally and reported to regulatory agencies and the public.

34. CNSC staff reported having performed routine quarterly compliance inspections and several focused inspections where weaknesses have been observed. CNSC staff stated that findings from the inspections have been addressed, or are being addressed, in a timely manner and in accordance with a corrective action plan that was reviewed and accepted by CNSC staff.

35. Cameco reported having implemented a comprehensive use of experience and corrective action process during the licence period, using CIRS. Cameco noted that all events, investigations and corrective actions are reviewed with site management representatives on a regular basis. CNSC staff confirmed the implementation of this process, and noted that training modules for each process have been developed and delivered to CFM personnel. CNSC staff assessed Cameco's progress in developing and implementing these processes, and noted that the deficiencies found were adequately addressed in a timely manner.

36. CNSC staff reported that no safety-significant events occurred at the facility during the current licensing period, and that a few minor incidents were promptly reported to CNSC staff. Cameco investigated the incidents and took corrective actions to prevent recurrence, and CNSC staff is satisfied with Cameco's actions related to the events.

37. The Port Hope Community Health Concerns Committee, in its intervention, expressed concerns on the uranium in air monitoring at the facility, more specifically in the compaction room, and asked about actions taken when action levels are exceeded. The Commission asked CNSC staff for comments on this topic. Cameco responded that all necessary tests are done on their employees and expressed their confidence that proper actions are taken to reduce doses as low as reasonably achievable. CNSC staff explained that they are made aware of action levels and administrative levels exceedances. This information is reported to the Commission through event notification reports and interim reports. CNSC staff plans on including this information in the planned annual report for CFM. CNSC staff also noted that administrative levels exceedances are part of Cameco's annual report for CFM and that this report is published on Cameco's website.

38. The Commission asked Cameco for reasons why the ability to possess enriched uranium should stay in the proposed licence if Cameco is currently dismantling the enriched uranium production line. The Cameco representative responded that there is a competitive advantage for the company to have the flexibility to manufacture enriched fuel should the need arise. CNSC staff stated that they will ensure that appropriate programs are in place before restarting the production of enriched uranium. CSNC staff expressed their intention to enter in the LCH a requirement for Cameco to inform the CNSC of their eventual intention on re-using enriched uranium.

39. Property Owners for Fair and Equitable Compensation, in their intervention, questioned whether management has met all of the conditions set out in previous licence conditions. The Commission asked for comments on this topic. CNSC staff responded that only one item from an audit related to the design change process is outstanding, and that this item is scheduled to be completed by the end of February 2012. The Cameco representative expressed Cameco's commitment to safe operation at all times and confirmed that they are making the necessary efforts to complete the remaining action item within the scheduled time.

40. Based on its consideration of the presented information, the Commission concludes that Cameco's operating performance at CFM provides a positive indication of Cameco's ability to adequately carry out the activities under the proposed licence. The Commission is satisfied that proper measures are taken to minimize the workers exposure to uranium in air at the facility. The Commission is also satisfied that Cameco has made appropriate efforts to meet the conditions set out in their operating licence.

41. Regarding the use of enriched fuel at CFM, the Commission agrees to keep the licence condition to this effect in the renewed licence, but directs CNSC staff to include in the LCH the requirement for Cameco to request approval from CNSC staff before possessing enriched uranium in a quantity above 0.8 standard critical mass.

Safety Analysis

42. The Commission examined issues related to the program areas of Safety Analysis in order to assess the adequacy of the safety margins provided by the design of the facility.

43. Cameco reported having programs and procedures in place that address the areas that comprise this Safety and Control area, including a Safety Analysis Report (SAR), an environmental aspects registry and a chemical hazard assessment. Cameco noted that the SAR has been updated during the current licence period. CNSC staff reported having reviewed Cameco's updated SAR.

44. Cameco stated that a radiation accident analysis was performed, using a worst-case scenario for the release of radioactive materials which provides an upper limit to off-site doses. Cameco aims to demonstrate that, even in the case of a highly unlikely event, the resulting dose to the public is within regulatory limits. Cameco added that another analysis was performed to consider the after effects of a rupture of the liquid hydrogen containment vessel, which showed that there would be very slight damage to the main structure. Cameco concluded that the facility would maintain control of its radioactive materials if this type of accident happened.

45. Cameco reported having developed a nuclear criticality safety program to address the handling and processing of enriched uranium, which aligns with the new Regulatory Document RD-327, *Nuclear Criticality Safety*. CNSC staff confirmed that Cameco has a fully developed nuclear criticality safety program, which has been in place for the whole current licensing period. CNSC staff reported having performed compliance inspections of this program, and that any findings that were identified have been promptly corrected by Cameco. CNSC staff added that the programs, the safety analysis and criticality monitoring systems in place meet the requirements of RD-327. CNSC staff considers the implementation of this program to be satisfactory.

46. Some intervenors, including individuals and the Port Hope Community Health Concerns Committee, expressed concerns that there was no "buffer zone" around the facility to protect the public from a potential accident at the site. The Commission asked Cameco to address this issue. A Cameco representative responded that a buffer zone was not required for the facility because the defence-in-depth approach used at the facility is protective of the public and the environment. The Commission asked CNSC staff to explain whether there is a regulatory requirement for the facility to have a buffer zone. CNSC staff stated that there is no requirement for a facility to have a buffer zone as long as there are sufficient controls in place to protect the public and the environment.

47. On the basis of the information presented, the Commission concludes that the systematic evaluation of the potential hazards and the preparedness for reducing the effects of such hazards is adequate for the operation of the facility and the activities under the proposed licence. The Commission is satisfied that a buffer zone is not required for the facility and that the facility does not pose an unreasonable risk to the health and safety of persons or the environment in its present location.

Physical Design

48. Cameco reported that changes to the physical design of equipment, processes and the facility with the potential to impact safety are evaluated using the internal change control process.

49. Cameco noted that several improvements were implemented during the current licensing period. Among these improvements, Cameco reported having entered in 2010 into a contractual arrangement with the provincial Technical Standards and Safety Authority to ensure that the oversight of pressure retaining components and systems continues to be carried out by a third-party expert. Also, improvements to the fire protection systems have been made with the installation of a new fire suppression system in the outside waste storage and the fuel storage buildings. CNSC staff concurred with Cameco.

50. CNSC staff considers that Cameco has acceptable plant design and change control processes in place at CFM. CNSC staff further noted that modifications to the facility and equipment for the protection of workers and public health and the environment are submitted annually to the CNSC as part of the annual compliance report.

51. CNSC staff reported that issues arising from the compliance inspections performed have been satisfactorily addressed in accordance with Cameco's corrective action plan that was reviewed and accepted by CNSC staff.

52. On the basis of the information presented, the Commission concludes that the design of CFM is adequate for the operation period included in the proposed licence.

Fitness for Service

53. Cameco reported that there are programs and procedures in place at CFM to ensure that the facility is operated in a safe, clean and reliable manner. Cameco has also established a preventative maintenance program.

54. Cameco stated that fire protection systems are tested according to an established schedule as outlined in the fire protection program. Cameco added that third-party reviews are conducted to confirm that required tests and inspections are completed. These review reports are submitted to the CNSC.

55. Cameco also noted the following activities related to this safety and control area: the beginning of a transition to a computer database for managing all maintenance records, including preventive and corrective maintenance, and process monitoring which is conducted through product and intermediate quality control testing.

56. CNSC staff confirmed the existence of a preventative maintenance program for the safety-related operating equipment, and noted that any compliance issues found during inspections were satisfactorily addressed.

57. Based on the information provided, the Commission concludes that Cameco's activities related to the fitness for service of the facility are acceptable.

Radiation Protection

58. Cameco reported having an extensive radiation protection program in place, as well as other programs that help limit radiation exposure. Cameco added that the health physics compliance reports that are prepared according to CNSC requirements effectively trend all areas of the radiation protection program. Cameco presents the environmental portion of these reports to the Municipality of Port Hope on a quarterly basis and the full reports are posted on their website.

59. CNSC staff reported that they reviewed Cameco's annual health physics compliance reports for the years 2007 to 2010 and that they found no major deficiencies in the implementation of the radiation protection program.

60. CNSC staff reported that Cameco revised their radiation protection program detailed documentation, as well as their Radiation and Environmental Protection Manual. CNSC staff reviewed these updated documents and found them acceptable.

61. CNSC staff confirmed that Cameco has in place an ALARA (as low as reasonably achievable) program based on Regulatory Guide G-129, *Keeping Radiation Exposures "As Low As Reasonably Achievable (ALARA)"*. CNSC staff added that an ALARA committee is maintained at CFM, that several ALARA initiatives were implemented during the current licensing period and that CNSC staff is satisfied with Cameco's effort to maintain radiation exposures ALARA.

62. Cameco noted that actions arising from the regulatory inspections are tracked by Cameco to ensure timely disposition, and that progress on completing actions is reviewed by CNSC staff and Cameco management on a regular basis. CNSC staff reported that they concluded from the two inspections done during the current licence period that the radiation protection program and its implementation were adequate, but that improvements were necessary in a number of areas. CNSC staff noted that all items raised in the 2009 and 2010 inspections are closed.

63. Cameco reported having in place internal action levels for various radiological parameters, approved by CNSC staff. Cameco has also in place lower internal administrative levels for parameters that do not require action levels. Cameco also noted that radiation objectives and targets are established jointly by the site management team and site specialists.

64. Cameco reported that no CNSC regulatory limits were exceeded but that there were 8 action level exceedances during the current licence period. Cameco conducted an investigation and corrective actions were taken. There were no adverse impacts to the health and safety of workers or the public from the reported events. CNSC staff reviewed and found acceptable Cameco's corrective action plans from the event.

65. CNSC staff considers that the measures in place at CFM to monitor for and control contamination are acceptable and that Cameco's performance in this area is satisfactory.

66. The Port Hope Community Health Concerns Committee, in their intervention, expressed concerns on the lack of monitoring of post-employees. The Commission asked for comments on this topic. The Cameco representative explained that, while there is no follow-up program for former employees, there is a program in place for the monitoring of dose levels for all existing employees. CNSC staff concurred with Cameco, and noted that Cameco's radiation protection program includes extensive monitoring of employees for radiation exposure, and that all of this information is collected by CNSC staff and sent to the National Dose Registry.

67. The same intervenor expressed the view that there is a lack of cohort and case-controlled studies in the Port Hope area, and that more studies need to be done. The Commission asked for CNSC staff's comments on this topic. CNSC staff explained that the CNSC Information Document INFO-0781[6] (also called the Port Hope Synthesis Report) does include the cohort and case-controlled studies that were done previously on nuclear energy workers in the Port Hope area. CNSC staff also noted that cohort and case control studies in a residential setting where radiation exposures are very low were not done because there was no individual exposure information. CNSC staff noted, however, that the Port Hope Synthesis Report includes a case control study of residential radon exposure.

68. One intervenor attributed his health problems to the radiation doses he received while working at CFM (previously Zircatec), and expressed the view that the CNSC has no interest in consequences of radiation exposure to the health of nuclear energy workers. The Commission asked CNSC staff for comments. CNSC staff explained that part of the mandate of the CNSC is to protect the health and safety of workers, using the *Radiation Protection Regulations.* CNSC staff added that there are very stringent requirements in terms of radiation protection programs, including the monitoring of doses to workers, and that strong action is taken regarding the monitoring and the control of worker doses and when an overexposure occurs. CNSC staff added that they have reviewed the doses received by this intervenor and that there are no indications of radiation exposure above regulatory limits for whole body doses or skin doses, nor any medical evidence of a link between his work at CFM and his ailments.

69. One intervenor, Physicians for Global Survival, estimated that, statistically, three out of 100 nuclear energy workers would get cancer from exposure to occupational radiation at the regulatory limit of 20 mSv. Other intervenors raised similar issues regarding low doses of radiation. The Commission asked for more information on this subject. CNSC staff explained that the intervenors were using the linear no-threshold (LNT) relationship to calculate the probability of cancer among workers exposed at low doses of radiation. CNSC staff noted that this is not an appropriate use of this model, which is used by many international organizations, including the International Commission on Radiological Protection and the United Nations Scientific Committee on the Effects of Atomic Radiation. CNSC staff added that no workers in Canada receive exposures at the regulatory limits because of the implementation of radiation protection programs and ALARA requirements and, as such, the theoretical risk to those workers would be much lower. CNSC staff also pointed out the numerous studies that find no increase of cancer in Nuclear Energy Workers.

[6] CNSC Information Document INFO-0781, *Understanding Health Studies and Risk Assessments Conducted in the Port Hope Community from the 1950s to the Present*, April 2009.

Public Radiation Exposure

70. Some intervenors, including the Port Hope Community Health Concerns Committee and Physicians for Global Survival, expressed concerns regarding the health effects of exposure to radiation, especially taking into account the low-level radiological contamination in the area.

71. Physicians for Global Survival noted the higher incidence of cancer of the trachea, bronchus and lung in Port Hope as found in CNSC information document INFO-0781 and suspects that this is caused by inhaled contaminants from the nuclear industry. The Commission asked for more information on this topic. CNSC staff responded that the increased incidence of cancer is not unique to Port Hope but is also found in the whole Northumberland County, and that it is considered by the regional public health agency to be primarily caused by smoking. CNSC staff added that, having done a review of the scientific literature, these types of cancer are not typical of exposure to the low levels of uranium found in Port Hope.

72. Physicians for Global Survival expressed the view that the current Canadian standard for tritium in drinking water of 7000 Bq/L is not protective of the population. In response to comments requested by the Commission on this topic, CNSC staff explained that the current Canadian standard is based on the World Health Organization recommendations and that CNSC staff considers it to be safe. CNSC staff noted that the nuclear facilities in Port Hope do not release tritium in the atmosphere.

73. Physicians for Global Survival suggested that the CNSC should use epidemiological data from more populated areas such as in Europe to determine health effects from exposure to releases from nuclear facilities, citing the German KiKK study that found elevations of childhood leukemia around nuclear power plants. The Commission asked for more information on this statement. CNSC staff explained that the German Radiation Protection Institute formed a committee of experts to review this study. This committee determined that there was no relationship between the cluster of childhood leukemia near the Krümmel power plant and radiation exposure. CNSC staff noted the existence of many other childhood leukemia clusters that are not near nuclear power plants. CNSC staff cited another French study concluding that there is no relationship between childhood leukemia and radiation exposure near nuclear power plants. CNSC staff also pointed out that no increase in childhood leukemia has been found in Port Hope.

74. In their intervention, the Port Hope Community Health Concerns Committee reported the results of a peer review by Dr. Mintz of two Health Canada studies, concluding a significant increase of cancer among the residents of Port Hope. The Commission asked for more information on this topic. CNSC staff responded that they thoroughly reviewed Dr. Mintz's interpretation of the data. CNSC staff disagreed with Dr. Mintz's conclusion that there was no information on exposures of the members of the public in Port Hope, and stated that this information is available since credible, independent

experts for the federal government had performed extensive dose reconstruction and evaluation work. CNSC staff also stated that the numerous health studies of the residents of Port Hope have shown that there is no increased risk resulting from radiation exposures in this area.

Conclusion on Radiation Protection

75. Given the preceding discussion regarding the health effects associated with radiation exposure, the Commission is satisfied that the regulatory limits are protective of human health. Furthermore, the Commission is satisfied that the implementation of the radiation protection program and ALARA requirements ensure that the doses received by workers and members of the public are well below the regulatory limits. Regarding health studies, the Commission is satisfied with CNSC staff's findings that there is no increased risk to the residents of Port Hope associated with the operation of Cameco's facilities.

76. Based on this information, the Commission is of the opinion that, given the mitigation measures and radiation protection programs that are in place to control hazards, Cameco will provide adequate protection to the health and safety of persons and the environment.

Conventional Health and Safety

77. Cameco reported having in place a comprehensive and well-established worker protection program based on the *NSCA*, the *Regulations* under the *NSCA* and *Canada Labour Code, Part II*[7]. Cameco also noted that the health and safety of employees is assured through site-specific safety and health management programs. Cameco provided details on the improvements that have been incorporated into CFM's occupational health and safety programs. In particular, Cameco noted that the employee Safety, Health and Environmental Handbook was updated. CNSC staff confirmed that Cameco has established conventional health and safety policies and programs to ensure the protection of workers from conventional hazards.

78. Cameco reported that all job hazard analyses are being reviewed by the training department to increase the effectiveness of operator training. CNSC staff confirmed that Cameco has developed and delivers safety-related training courses to employees and contractors.

79. Cameco explained that they have tracked leading and lagging safety indicators for many years, which helped improve safety performance. All areas of the facility are inspected on a monthly basis, and Cameco stated having continued to increase employee awareness regarding health and safety issues.

[7] R.S.C. 1985, c. L-2.

80. Cameco also noted having achieved one year without a loss time injury during the current licence period. CNSC staff confirmed that the frequency of lost-time injuries remains low for the current licensing period.

81. CNSC staff reported that the findings identified during the inspections were addressed in a timely manner in accordance with a corrective action plan that was reviewed and approved by CNSC staff. CNSC staff considers Cameco's performance in this area to be acceptable.

82. Several intervenors, including Cameco employees, expressed the view that Cameco takes safety very seriously and that a good work ethics is present at CFM.

83. The Commission is of the opinion that, given the mitigation measures and safety programs that are in place or will be in place to control hazards, Cameco will provide adequate protection to the health and safety of workers in the facility.

Environmental Protection

84. Cameco reported having an environmental monitoring program, which includes the sampling of water and air emissions, high-volume sampling of ambient air, and soil, surface water and groundwater monitoring. Cameco monitors air and liquid effluent discharges to ensure that they meet applicable provincial and federal requirements. CNSC staff concurred with Cameco. CNSC staff also considers that Cameco's performance in this area is satisfactory.

85. Cameco explained that, in 2009, they hired an independent third-party to sample the air emissions from building ventilation sources and compare the results with Cameco's own results. Cameco stated that there is a very good alignment between the third-party independent results and those generated from Cameco's ongoing monitoring program.

86. Cameco explained that the equipment-related improvements during the current licensing period include the installation of a HEPA filter on one of the main process discharge stacks, which brought further down the emissions of uranium in the environment. CNSC staff reported that a significant reduction in gamma dose rates was noted after shielding was installed between the storage building and the perimeter fence in 2005 when the radiation detectors installed around the exterior perimeter of the licensed facility detected a dose increase.

87. Cameco reported that internal action levels for key emission parameters are used and were approved by the CNSC. Cameco has also established additional administrative levels which provide an early warning of a potential concern for many parameters that do not have an action level.

88. CNSC staff reported that the inspections performed during the current licence period looked at Cameco's performance in controlling releases of uranium and other hazardous contaminants to the environment. CNSC staff stated that findings during these inspections were addressed by Cameco in a timely manner and in accordance with a corrective action plan that was reviewed and accepted by CNSC staff.

89. CNSC staff proposed to lower the licenced release limits for uranium in air and liquid effluents based on ALARA (i.e., equivalent to a dose of 50 µSv/year for a member of the public, based on Regulatory Guide G-129 Rev.1, *Keeping Radiation Exposures "As Low As Reasonably Achievable (ALARA)"*.). The Commission requested Cameco's opinion on this matter. Cameco responded that they find the new proposed licence limits to be acceptable.

90. Several intervenors, including Cameco employees, expressed the view that releases to the environment are minimal, and that Cameco makes the environment a priority and is dedicated to reducing these releases as much as possible.

91. One intervenor expressed concerns regarding the accumulation of contaminants around CFM and suggested the addition of a licence condition requiring zero emissions of any pollutant be released into the atmosphere, land or water. The Commission asked for comments on this topic. CNSC staff stated that, as part of continuous improvement, Cameco is expected to go through their programs on a regular basis and identify areas where emission reduction is possible, even if the emissions are already very low. Cameco commented that they are committed to lowering emissions as much as reasonably possible, taking into account the ALARA principle. Cameco added that the emissions from CFM are very low and it intends to continue to look for improvements in this area.

Uranium Environmental Monitoring

92. CNSC staff reported that Cameco monitors uranium released as gaseous emissions and liquid effluents from the facility to demonstrate compliance with limits set out in the licence. CNSC staff stated that the emissions are effectively controlled and are consistently well below their respective licence limits for the current licence period.

93. CNSC staff explained that the results of high-volume samplers show that the maximum concentration of uranium in ambient air was far below action level. CNSC staff also noted that, while there are currently no federal or provincial established limits or guidelines for uranium in ambient air, the MOE announced in June 2011 new air standards that will take effect on July 1, 2016. CNSC staff stated that Cameco meets these new standards.

94. CNSC staff reported that soil samples were collected and that the results show that the uranium levels are below the most restrictive federal and provincial soil quality guidelines for uranium in residential properties.

95. Cameco reported that they hired a third-party consultant in 2007 to determine if uranium is present in groundwater. The results from these studies are that there were no increasing levels of uranium, and that contamination was due to shallow, historical activities at the ground surface. Also, the impact from uranium to the groundwater is confined to a very limited area and there is no indication of uranium migrating from this area.

96. CNSC staff explained that Cameco has a network of 80 groundwater monitoring wells located on-site and off-site within the immediate area of CFM. Cameco provided data on the results from the sampling of monitoring wells. Groundwater sampling and analysis are conducted semi-annually. The findings from this sampling are that uranium concentration levels in groundwater are elevated in a confined area located in the exterior of the northeast corner of the main building, due to historical practice. There were no detectable trends in the groundwater uranium concentrations in recent years. CNSC staff considers the measured concentration levels to be acceptable.

97. CSNC staff explained that there are no criteria related to uranium that are used by the Ontario Ministry of the Environment for the protection of the environment. CNSC staff noted that the values of uranium in groundwater are higher than the Canadian Drinking Water Quality Guideline of 7000 Bq/L, but that there are no drinking water wells on the CFM site. Also, all off-site monitoring wells (non-drinking water) values are below or approximately at the same level as this Guideline.

98. The Commission enquired on the reasons why the contour lines showing groundwater uranium concentration have an irregular shape. The Cameco representative responded that there are no specific reasons for this anomaly. CNSC staff concurred with Cameco and noted that the distribution of the monitoring wells gives the false impression of an anomaly. CNSC staff noted that the plume in this area is essentially immobile.

99. The Port Hope Community Health Concerns Committee, in its intervention, expressed the view that there is no regular independent monitoring of Cameco's emissions and of the surrounding environment. This intervenor also stated that the OMOE should be involved in the environmental monitoring of Cameco's facilities in the Port Hope area. The Commission asked for comments on this topic. CNSC staff explained that Cameco's environmental monitoring program is thoroughly reviewed to ensure that the data submitted is credible. CNSC staff also noted that, using the new CNSC laboratories, a CNSC environmental monitoring program would begin the next fiscal year. CNSC staff confirmed that Cameco's environmental monitoring program includes sampling on the surface and at deeper levels to confirm that there is no accumulation of uranium in the surface soil.

100. The Commission sought further information from the OMOE. The OMOE representative commented that they performed soil sampling in the Port Hope area in 1986 and in 2000, and noted a decrease of uranium concentration in soil over time. The OMOE representative explained that this decrease is caused by soil movement and leaching, and because the uranium releases from the Cameco facilities are small. The OMOE representative also described soil sampling programs around the Port Hope Town Hall, where no measurable changes in concentration were noted, and in Marina Park, where there were variations in uranium concentration over time attributed to sample contamination. The OMOE representative also described the sampling program in the Port Hope waterworks that started in 2005. The OMOE representative noted that the results to date do not show any evidence of uranium accumulation. The OMOE representative further noted that natural variability of uranium in soil make evidence of uranium accumulation difficult to obtain.

Conclusion on Environmental Protection

101. Based on the information provided, the Commission concludes that Cameco has adequate measures in place for the protection of the environment and the health and safety of persons. The Commission expresses its satisfaction with the OMOE's involvement regarding environmental monitoring in the area, and with the CNSC's statement that a CNSC-led environmental monitoring program is forthcoming for the area.

102. The Commission is satisfied with the conclusion from the OMOE monitoring program that there is no evidence of uranium accumulation in soil in the Port Hope area.

103. The Commission also accepts the new proposed, stricter licence limits for uranium in air and liquid effluents.

Emergency Management and Fire Protection

Emergency Management

104. Cameco reported that, during the current licence period, the emergency response program was the subject of a number of assessments (CNSC staff, third-party assessments and internal drills), and that all actions and recommendations resulting from these assessments have been addressed. CSNC staff concurred with Cameco.

105. Cameco explained that an effective emergency response is carried out through Cameco's emergency preparedness plan and response procedure, and that as the primary emergency response provider for the facility, the Port Hope Fire and Emergency Services Department have the resources in place to effectively respond to emergencies at CFM.

106. Cameco reported that ongoing training has been conducted for all emergency response personnel, as well as training drills, exercise and courses. CNSC staff confirmed the existence of this training. Cameco added that an emergency response and training assistance agreement between Cameco and the Municipality of Port Hope provides the framework for successful emergency response to the facility. CNSC staff confirmed the existence of a memorandum of understanding in place with the Port Hope Fire and Emergency Services Department. Cameco stated that it provides the necessary equipment and training to effectively respond to emergencies at CFM. Cameco intends on conducting a joint full scale emergency exercise with the Municipality of Port Hope by the end of the year 2013.

107. CNSC staff reported having inspected one exercise at the facility during the licence period. CNSC staff concluded that Cameco had effective processes in place to demonstrate their emergency response capability and to be able to assess their programs for continuous improvement opportunities. CNSC staff added that the minor issues identified were addressed in a timely manner.

108. Cameco reported that there have been two flood studies in the area around CFM, and that both studies concluded that the facility would not be impacted by the probable maximum rainfall event in the area. The Commission asked Cameco whether these studies took into account climate change and extreme conditions. The Cameco representative explained that, while there have been no updates done to the reports regarding climate change and extreme conditions, the maximum 100-year flood event and probable maximum flood[8] in the area were used. Cameco considers having met the requirements related to these studies. CNSC staff considers that, since the probable maximum flood criteria is used, the potential climate change effect would be covered.

109. The Port Hope Community Health Concerns Committee, in its intervention, stated that Cameco and Port Hope are not listed as part of the Ontario Provincial Nuclear Emergency Response Plan (PNERP). The Commission asked for comments on this topic. CNSC staff reported that the Emergency Measures Ontario (EMO) division in Ottawa confirmed that the Cameco facilities in Port Hope are covered under the provincial emergency plan. The EMO representative explained that the OMOE has a very strong role through the PNERP, including environmental monitoring after a nuclear emergency and providing meteorological and hydrological support. The EMO representative added that, in Ontario, the municipality provides the initial response, and that the province provides additional resources if the municipality is unable to deal with the event. The EMO representative noted that there are resources available to respond to an emergency, if necessary.

[8] The probable maximum flood is defined by the U.S. Federal Energy Regulatory Commission (2002) as "the flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in the drainage basin under study." (Source: Environmental Canada Web site)

Fire Protection

110. Cameco reported that, as required by the licence, CFM is subject to third-party reviews for verification of the inspection requirements under the National Fire Code and NFPA 801. Cameco stated that all deficiencies identified during these inspections have been addressed. Cameco also stated that CFM's fire protection program meets the requirements of all relevant federal and provincial codes. CNSC staff confirmed that a comprehensive fire protection program is in place at CFM.

111. In August 2010, Cameco submitted its revised fire protection program. CNSC staff concluded from its review that, while some of the procedures require revision, the risk to the health and safety of persons is low. Cameco has committed to address these deficiencies in a timely manner. CNSC staff intends to monitor the implementation and maintenance of the fire protection program through routine regulatory oversight and future fire protection inspections.

112. Cameco explained that CFM conducts routine monthly fire inspections of the facility to identify deficiencies in fire protection elements and fire protection systems, and that all reports are entered into the CIRS (Cameco Incident Reporting System) database.

113. Cameco reported that it maintains a fire hazards analysis (FHA) that meets the requirements of the National Fire Protection Association, has been completed by a third-party expert and is reviewed at least every five years. Cameco further noted that a risk-based assessment is used to identify and prioritize the site systems, equipment and processes. Cameco further stated that the FHA has been updated during the current licence period. CNSC staff reported having reviewed the updated FHA and that they found it acceptable. Cameco provided an action plan to address the recommendations originating from the review.

114. CNSC staff reported that, during the current licence period, Cameco submitted the required Annual Third Party Review (TPR) reports on the compliance with the fire protection requirements. CNSC staff's review concluded that the scope of the TPR needed improvement. Cameco submitted in July 2011 an updated TPR that CNSC staff considered acceptable. Cameco also submitted an action plan related to the findings of this report, which CNSC staff reviewed and accepted.

115. The Commission asked about what measures are taken to prevent fire in the trailers where waste is stored on the CFM site. The Cameco representative responded that there is access for proper firefighting and that they have been regularly consulting the Cameco Fire Department. The Mayor of Port Hope confirmed that a Memorandum of Understanding is in place between the Municipality and CFM, and that the Municipality is working very closely with Cameco. CNSC staff commented that the hazards represented by the storage of combustible and non-combustible materials were evaluated by a Fire Hazards Analysis and that there were no unreasonable risks associated with the CFM site.

Conclusion on Emergency Management and Fire Protection

116. The Commission is of the opinion that, given the mitigation measures and safety programs that are in place or will be in place to control hazards, Cameco will provide adequate protection to the health and safety of persons, the environment and national security.

117. The Commission is satisfied that the nuclear facilities in the Port Hope area are appropriately covered by the Ontario PNERP.

Waste Management

118. Cameco reported that all clean (non-uranium contaminated) waste at CFM is either recycled or sent to landfill. Cameco added that several methods for disposal have been assessed during the licence period for the management of wastes at CFM. A limited quantity of oil has been recycled. A sampling campaign was planned to characterize the remaining oil and recycle material if appropriate.

119. Cameco explained that the following actions are, or will be, performed regarding waste management:
    - A further characterization of wastes in inventory to determine if they meet the criteria for hazardous waste landfill.
    - The assessment of regulatory requirements for shipping of contaminated combustibles to the Blind River Refinery incinerator.
    - The additional processing of materials within the Fuel Services Division at the Port Hope Conversion Facility (their decontamination, which could allow them to be recycled or released for scrap metal re-melt).

120. CNSC staff reported that all non-radioactive hazardous wastes are registered on the provincial hazardous waste database as required by Ontario regulations. Wastes are stored on-site until arrangements are made for proper disposal.

121. Cameco reported not having been able to find any commercially viable, low-level radioactive waste management facilities in Canada. Cameco however noted the availability of foreign disposal facilities.

122. CNSC staff reported that findings during compliance inspections were addressed or are being addressed by Cameco in a timely manner and in accordance with a corrective action plan that was reviewed and accepted by CNSC staff.

123. The Municipality of Port Hope, in its intervention, expressed concerns regarding the management of waste on the CFM site. The Commission asked CNSC staff about possible limitations on the storage of waste. CNSC staff responded that Cameco is allowed to store waste according to their waste management plan, which is considered acceptable by CSNC staff. This plan has to include the actions to be taken to dispose of

the wastes. There are no specific limits, but Cameco is required to store the waste on site safely. CNSC staff added that they are encouraging owners of low level waste to participate in a working group led by NRCan. The Cameco representative confirmed that plans are in place to deal with all types of waste and that they intend to execute them over the next several years.

124. Based on the information provided, the Commission concludes that appropriate measures regarding waste management are taken at CFM, and that Cameco appropriately follows its waste management plan.

Security

125. With respect to site security issues, the Commission was provided with separate, protected CMDs, which were considered in a closed session.

126. Cameco reported that CFM's security plan provides the basis for security operations at the facility and identifies the systems and processes in place to meet security program objectives. Cameco further noted that they responded to all findings from CNSC inspections and implemented recommendations to improve the overall security program. A number of initiatives were also developed and put into place to further enhance the security program.

127. The Commission concludes that Cameco has adequate measures in place for ensuring the physical security of the facility, and is of the opinion that Cameco will continue to so provide during the proposed licence period.

Safeguards

128. The CNSC's regulatory mandate includes ensuring conformity with measures required to implement Canada's international obligations under the Treaty on the Non-Proliferation of Nuclear Weapons. Pursuant to the Treaty, Canada has entered into safeguards agreements with the IAEA. The objective of these agreements is for the IAEA to provide credible assurance on an annual basis to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no undeclared nuclear material or activities in this country.

129. Cameco reported that CFM maintains a comprehensive natural/depleted and enriched uranium inventory and material transfer records. During current licence period, CFM has also participated in the full range of required inventory verifications and several random inspections on short notice. Cameco stated that minor issues identified have been addressed to the satisfaction of all parties.

130. CNSC staff reported that, during the current licensing period, Cameco provided the CNSC with all reports and information necessary for safeguards and complied fully with IAEA and CNSC requests. IAEA conducted 10 inspections during the licensing period. Cameco provided IAEA with necessary access and assistance to perform their activities. CNSC staff concludes that Cameco has met safeguards requirements set out in the licence.

131. Cameco intends to develop new software in the next licensing period that will allow for better tracking and reporting of uranium inventory at the site and quicker generation of inventory data.

132. CNSC staff reported that the new Regulatory Document, RD-336, *Accounting and Reporting of Nuclear Material*, which states the new requirements in this regard and replaces AECB 1049/Rev.2, *Reporting Requirements for Fissionable and Fertile Substances*, has been added to the proposed LCH for CFM.

133. Based on the above information, the Commission is satisfied that Cameco has made and will continue to provide adequate measures required in the areas of safeguards and non-proliferation at CFM that are necessary for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

Packaging and Transport

134. Cameco reported that CFM staff involved in the transportation of dangerous goods receive training in the aspects of regulations commensurate with their job responsibilities. Cameco noted that there was one event related to this safety and control area, which did not pose any risk to the public or workers.

135. CNSC staff reported that Cameco has developed and implemented a packaging and transportation program for activities at its site. Cameco has also reported in a timely manner any dangerous occurrences to the CNSC as per the *Packaging and Transport of Nuclear Substances Regulations.* CNSC staff is of the view that Cameco complied with appropriate Regulations regarding packaging and transport.

136. In its intervention, the Port Hope Community Health Concerns Committee questioned why the European Union requires that UF_6 cylinders have special blanketing as a protective measure to prevent overheating, but that Canada does not. The Commission asked for more information on this topic. The Cameco representative stated that the UF_6 cylinders meet all relevant national and international regulatory requirements, and noted that they have been safely transported for several years. The Cameco representative added that the models used to measure whether the cylinder meets thermal requirements of being able to withstand an 800°C fire for 30 minutes are different in Europe, which is why the European Union requires a thermal blanket. CNSC staff concurred with Cameco, and noted that the IAEA accepts cylinders with or without thermal blankets.

137. The Port Hope Community Health Concerns Committee also expressed concerns regarding neutron radiation emitted by these cylinders. The Commission asked for comments on this topic. CNSC staff explained that the results from a study done by Cameco on the neutron dose rates during transport showed that the highest dose to a nuclear energy worker from neutron radiation would be 0.16 mSv, consistent with previous studies and less than ten percent of the annual average effective dose to the critical worker groups. CNSC staff noted that the potential dose to a member of the public would be less than 0.003 mSv per year, which is a small fraction of the regulatory dose of 1mSv for a member of the public.

138. The Commission further asked about the possibility of shielding for neutrons. Cameco responded that neutrons are difficult to shield, but agreed with CNSC staff that doses from exposure to neutrons during transport are low and well-documented. Cameco also noted that the results from their study on this topic have been accepted by CNSC staff. CNSC staff commented that the package used for transport undergoes leak testing and, once the package is filled, a dose measurement around the package is performed. CNSC staff stated that the precautions used to protect against other types of radiation also protect against neutrons. CNSC staff also noted that the packages containing nuclear material used by Cameco emit low energy neutrons, which do not travel far and, therefore, the general public's exposure to these neutrons is negligible.

139. The Port Hope Community Health Concerns Committee expressed concerns that radiation doses from neutrons would not be recorded on the workers dose records, and that it might prevent workers from receiving compensation in the case of radiation-related illnesses. This intervenor stated that, in the United States, doses to workers have been recalculated to take into account neutron radiation exposure that is not captured by standard dosimeters. The Commission asked for more information on the estimation of doses to workers in Canada. CNSC staff explained that they require special dosimeters for workers most likely to be exposed to neutrons, and that neutron radiation doses are estimated for other nuclear energy workers, including the workers who transport UF_6 cylinders. In the case of Cameco workers, CNSC staff stated that Cameco currently has enough information to provide a realistic estimate of neutron radiation doses. The intervenor requested that CNSC staff provide its analysis of the neutron risk from UF_6 cylinders in transport. CNSC staff stated that it would do so.

140. Based on the above information and considerations, the Commission is satisfied that Cameco is meeting regulatory requirements regarding packaging and transport. The Commission is also satisfied that workers are adequately protected from radiation exposure during transport and that their radiation doses are properly estimated and recorded. The Commission expects CNSC staff to provide the Port Hope Community Health Concerns Committee with the requested information concerning the neutron risk from UF_6 cylinders in transport.

Application of the *Canadian Environmental Assessment Act*

141. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act*[9] (CEAA) have been fulfilled.

142. CNSC staff indicated that the application to renew the licence for the facility under subsection 24(2) of the NSCA is not prescribed for the purposes of paragraph 5(1)(d) of the CEAA in the *Law List Regulations*[10]. Since there are no other CEAA triggers for this project that involve the CNSC, CNSC staff stated that an environmental assessment under CEAA is not required.

143. The Commission is satisfied that an environmental assessment under the CEAA is not required for Cameco's application for licence renewal.

Aboriginal Consultation

144. Cameco reported that they include the chiefs of the five nearest First Nation bands on its mailing list to ensure that the First Nations are aware of all community forums and other community events. Cameco also noted having met with the Metis Nation of Ontario to provide background on their operations and invite comments.

145. CNSC staff reported that no potential impacts of the renewal of the operating licence on aboriginal rights are expected to occur. CNSC staff has informed the identified Aboriginal groups of the hearing and invited them to participate in the hearing process. No Aboriginal group has submitted an application for funding or registered to intervene.

146. The Commission is satisfied that sufficient notice was provided to Aboriginal groups regarding this hearing. The Commission's hearing process and participant funding program provided an opportunity to the public to make submissions and to participate in the regulatory process. The Commission has considered all of the submissions in making its decision and is satisfied that, in this particular instance, the Commission's hearing process was conducted in a way that upholds the honour of the Crown respecting licensing decisions.

Cost Recovery

147. CNSC staff reported that Cameco has always paid the cost recovery fees on time and in full. CNSC staff does not have any concerns with future payments.

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[9] S.C. 1992, c. 37
[10] SOR/94-636.

Decommissioning Plans and Financial Guarantee

148. The Commission requires that the licensee has operational plans for decommissioning and long-term management of waste produced during the life-span of the facility. In order to ensure that adequate resources are available for a safe and secure future decommissioning of CFM, the Commission requires that an adequate financial guarantee for realization of the planned activities is put in place and maintained in a form acceptable to the Commission throughout the licence period.

149. Cameco reported having an approved Preliminary Decommissioning Plan (PDP) and financial guarantee in place for CFM. Cameco also noted that they submitted an updated PDP in March 2011, and that they will upgrade the financial guarantee upon the CNSC approval of the PDP.

150. CNSC staff reported that Cameco has maintained an acceptable PDP for the whole period of the current licence. CNSC staff added that they reviewed the updated PDP and that they found it acceptable. CNSC staff has assessed the cost estimate in the updated PDP, which increased from 17.995M$ to 19.5M$, and found it acceptable. CNSC staff noted that they find the updated financial guarantee, in the form of an irrevocable letter of credit, to also be acceptable.

151. The Commission enquired about the reasons for the increase in the value of the cost estimate. Cameco responded that price escalation, as well as the addition of cost estimated for the disposal of deleterious type materials and expanded miscellaneous soil, were the main factors for the increase.

152. One individual and the Municipality of Port Hope expressed concerns regarding the cost estimate for the financial guarantee for the facility. The Commission asked for more information on this topic. CNSC staff confirmed that they examine the submitted cost estimates for each facility and, when it is approved, the licensee needs to implement an acceptable form of financial guarantee. CNSC staff stated that the driving factor for the decommissioning cost of a facility such as CFM is not the cleanup of the site, but the taking down of the buildings on site. In Cameco's case, the financial guarantee is in the form of an irrevocable letter of credit payable to the CNSC. CNSC staff also noted that Cameco is required to revise its cost estimate every five years.

153. Based on this information, the Commission considers that the preliminary decommissioning plan and related updated financial guarantee are acceptable for the purpose of the current application for licence renewal.

Public Information Program

154. Cameco reported that they continued to enhance their strategic approach to community outreach during this licensing period. Cameco has retained outside expertise to measure the public's opinion in Port Hope to help determine the effectiveness of its PIP. The results of this evaluation are posted on Cameco's website. Cameco stated that it was concluded from this review that Cameco's PIP is seen as effective and appropriate by the vast majority of Port Hope residents.

155. Cameco noted that the information about the company on its website is easily accessible to members of the public. Cameco's website has also been updated.

156. Cameco reported that, during the current licensing period, it continued with the open Cameco Community Forum which was introduced in 2006 and has proven effective in better informing the residents. Cameco added that, after each forum, a community forum newsletter is published and mailed to all addresses in Port Hope.

157. Cameco also noted that there is ongoing communication with local stakeholders, and that there is a wide range of initiatives related to public information in the Port Hope community.

158. CNSC staff confirmed that the main objective of the PIP is to provide residents of Port Hope and surrounding areas with timely and meaningful information on the effects on the environment and health, safety and security of the community as a result of the continued operation of the site.

159. CNSC staff considers Cameco's PIP in place to be acceptable. CNSC staff is also of the view that the approach for communicating information to the public is quite comprehensive.

160. Several intervenors expressed support for the proposed licence renewal. Intervenors were of the view that Cameco has safely operated CFM and would continue to do so over the life of the facility. Several intervenors were also of the view that Cameco was an important part of community and economy in Port Hope.

161. Several intervenors, including charitable organizations and community groups, highlighted that Cameco had provided them with financial support. Other intervenors asked if Cameco could provide a list of all of the organizations to which it had donated. The Commission asked if Cameco made this information available. Cameco committed to making such a list available, but noted that some information may be confidential.

162. Other individuals, in their interventions, expressed the opposite view that the public is not properly informed regarding the impact of CFM operations on the public health and safety and on the environment.

163. The Port Hope Community Health Concerns Committee, in its intervention, complained about the lack of public information regarding approvals by CNSC staff. The Commission asked for comments on this topic. CNSC staff explained that the licence format has been changed to include a Licence Conditions Handbook, one of the purposes being to make the information more visible. CNSC staff stated that approvals that are deemed of interest to the public would be reported to the Commission in a public meeting as soon as practicable and will not wait for the annual report to be made public.

164. Based on this information, the Commission is satisfied that Cameco's public information program meets regulatory requirements. The Commission is of the view that Cameco is making reasonable efforts to provide adequate information to the public on its operations. The Commission is also satisfied that CNSC staff is making appropriate efforts to make information relevant to the public more easily accessible.

Nuclear Liability Insurance

165. Cameco reported that nuclear liability insurance has been maintained at CFM for the current licence period. CNSC staff concurred with Cameco, and noted that Cameco has had a nuclear liability insurance for the duration of the current licence period and that the premium for the year 2011 was up to date.

166. The Property Owners for Equitable and Fair Compensation, in their intervention, stated that there is no insurance for nuclear accidents. The Commission asked CNSC staff for more information. CNSC staff responded that CFM is authorized to possess enriched uranium, which means that Cameco is required to have insurance coverage under the *Nuclear Liability Act*[11]. CNSC staff provided details on the *Act* and noted that normal property insurance would exclude damages related to a nuclear criticality incident because they are already covered under the *Nuclear Liability Act*. Cameco commented that there is currently not enough material on site to create a criticality event. Cameco added that, before they are allowed to possess enriched uranium above 0.8 standard critical mass, changes to Cameco's criticality program need to be made and submitted to CNSC staff for approval.

167. CNSC staff concurred with Cameco and confirmed that a change to the Licence Conditions Handbook needs to be made by CNSC staff upon request by Cameco before Cameco is allowed to possess uranium above 0.8 standard critical mass. CNSC staff added that this change, like any other change to the Licence Conditions Handbook, would be reported to the Commission and made public.

168. Based on the information presented, the Commission concludes that the measures in place related to Cameco's nuclear liability insurance for CFM are acceptable and give the general public adequate protection in the case of a nuclear accident. The Commission instructs CNSC staff to include in the Licence Conditions Handbook the requirement for Cameco to request approval from CNSC staff before possessing enriched uranium in a quantity above 0.8 standard critical mass.

[11] R.S.C., 1985, c. N-28.

Licence Length and Conditions

169. Cameco requested a renewal of the current operating licence for a period of ten years.

170. CNSC staff evaluated the request, using the criteria listed in CMD 02-M12, *New Approach to Recommending Licensing Periods*. Based on these criteria, CNSC staff concluded that Cameco's request is acceptable. CNSC staff noted that a number of licensees of similar profiles had been issued ten-year licences. CNSC staff also noted that they will take appropriate enforcement action and report to the Commission should the need arise.

171. One individual requested a two-year licence period, on the basis that the world has changing views and opinions on the nuclear industry. The Port Hope Community Health Concerns Committee also suggested a two-year licence, with the condition that within this two-year licence period, Cameco present a plan to fully decommission CFM. In its intervention, the Municipality of Port Hope suggested that a five-year licence, or a ten-year licence with a mid-term review, would be more appropriate than just a ten-year licence.

172. The Commission asked CNSC staff for any advantages to the public for Cameco to have a longer licence period. CNSC staff responded that one advantage of a longer licence is that trends are more viable with multiple years of data. The Commission commented that the public does not perceive any real advantages for a longer licence period and asked CNSC staff how the planned annual report would grant the public opportunity for comments. CNSC staff confirmed its intent to provide relevant compliance data in the annual report and expects public interventions to be allowed.

173. Based on the above information and considerations, and on the basis that an annual industry report would be presented at a public proceeding of the Commission on an annual basis, the Commission is satisfied that a ten-year licence is appropriate.

Conclusion

174. The Commission has considered the information and submissions of CNSC staff, the applicant and all participants as set out in the material available for reference on the record, as well as the oral and written submissions provided or made by the participants at the hearing.

175. The Commission concludes that an environmental assessment of the proposed continued operation of the facility, pursuant to the *Canadian Environmental Assessment Act* is not required.

176. The Commission is satisfied that the applicant meets the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that the applicant is qualified to carry on the activity that the proposed licence will authorize and that the applicant will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

177. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews Cameco Corporation's Nuclear Fuel Facility Operating Licence FFOL-3641.1/2012 for its Fuel Manufacturing Facility located in Port Hope, Ontario. The licence FFOL-3641.00/2022 will be valid from March 1, 2012 to February 28, 2022.

178. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 11-H17, with modifications as detailed earlier in this *Record of Proceedings*. The Commission also agrees with the suggested delegations of authority as set out in the draft LCH.

179. The Commission directs CNSC staff to prepare an annual industry report, including data on the performance of Cameco at CFM. The Commission also directs Cameco to prepare a status report on the safety performance of its facility approximately at midpoint of the 10-year licence term. The Commission requests that CNSC staff also prepare a report on the results of compliance activities carried out during the first half of the licence term and on the licensee's performance during that period. Cameco and CNSC staff shall present their reports at a public proceeding of the Commission, in the community of Port Hope.

M. Binder

APR 10 2012

Michael Binder
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

Intervenors	Document Number
Gerald Crawford	CMD 11-H17.2
Donald Ketcheson	CMD 11-H17.3
Marilyn Routly	CMD 11-H17.4
Jackie Brimblecombe	CMD 11-H17.5
Mike Kube	CMD 11-H17.6
Kevin Wharmby	CMD 11-H17.7
Ron Smith	CMD 11-H17.8
Port Hope and District Chamber of Commerce	CMD 11-H17.9
Diane Flesch	CMD 11-H17.10
Friends of Music	CMD 11-H17.11
Gerhard Heinrich	CMD 11-H17.12
Alvin Barr	CMD 11-H17.13
Municipality of Port Hope represented by L. Thompson and C. Cannon	CMD 11-H17.14 CMD 11-H17.14A
Bruce Cooper	CMD 11-H17.15
Northumberland Players	CMD 11-H17.16
Suzanne Frankcom-Wright	CMD 11-H17.17
Cobourg Dragon Boat and Canoe Club	CMD 11-H17.18
Heart & Stroke Foundation of Ontario	CMD 11-H17.19
Community Care Northumberland	CMD 11-H17.20
HMC Consulting	CMD 11-H17.21
John Morand	CMD 11-H17.22
Physicians for Global Survival	CMD 11-H17.23
Dan Rudka	CMD 11-H17.24
David Henderson	CMD 11-H17.25
Patricia Lawson	CMD 11-H17.26
Marcin Ryglewicz	CMD 11-H17.27
Donna Snowden	CMD 11-H17.28
Michael Murchie	CMD 11-H17.29
Victor Allan Glover	CMD 11-H17.30
Maricela Vosburgh	CMD 11-H17.31
Northumberland Manufacturers' Association	CMD 11-H17.32
Canadian Nuclear Workers Council	CMD 11-H17.33
Lou Rinaldi, Former M.P.P., Northumberland-Quinte West	CMD 11-H17.34
Rose Campbell	CMD 11-H17.35
Lorne VanderDussen	CMD 11-H17.36
Northumberland Labour Council	CMD 11-H17.37
Northumberland Services for Women	CMD 11-H17.38
Kathy Krakenberg	CMD 11-H17.39
Property Owners for Equitable & Fair Compensation represented	CMD 11-H17.40

by J. Morand	
United Steelworkers Local 14193	CMD 11-H17.41
Habitat for Humanity Northumberland	CMD 11-H17.42
Scientists in School	CMD 11-H17.43
Canadian Nuclear Association	CMD 11-H17.44
Graeme Lawson	CMD 11-H17.45
Atomic Energy of Canada Limited	CMD 11-H17.46
Port Hope Community Health Concerns Committee represented by F. More	CMD 11-H17.47 CMD 11-H17.47A
Jean Huffman	CMD 11-H17.48
Tyler Rouse	CMD 11-H17.49