



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 to Renew the Uranium Mill Operating
Licence for the Key Lake Operation**

**Public Hearing
Date** **October 1, 2 and 3, 2013**

RECORD OF PROCEEDINGS

Applicant: Cameco Corporation

Address/Location: 2121 – 11th Street West, Saskatoon, Saskatchewan S7M 1J3

Purpose: Application to renew the uranium mill operation licence for its Key Lake Operation.

Application received: December 21 and 31, 2012

Dates of public hearing: October 1, 2 and 3, 2013

Location: Kikinahk Friendship Centre,
320 Boardman Street, La Ronge, Saskatchewan

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R. J. Barriault M. J. McDill
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Secretary: M.A. Leblanc
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Intervenor
See Appendix A

Licence: Renewed

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1.0 INTRODUCTION

1. Cameco Corporation (Cameco) has applied to the Canadian Nuclear Safety Commission¹ for the renewal of the Uranium Mill Operating Licence for its Key Lake Operation located in northern Saskatchewan, approximately 570 kilometres north of Saskatoon, Saskatchewan. The current operating licence, UMLOL-MILL-KEY.01/2013, expires on October 31, 2013. Cameco requested a renewal of the licence for a period of 10 years.
2. The Key Lake site included two ore bodies, Gaertner and Deilmann, discovered in 1975 and 1976. Open pit mining was conducted between 1981 and 1997. After depletion of these ore bodies, uranium ore was transported from the McArthur River Operation for milling that began at the Key Lake site in 1983 and continues today.
3. Cameco is currently authorized to operate a uranium mill at Key Lake and to maintain the facilities necessary to support this operation, including waste management facilities. The current licence also authorizes Cameco to produce uranium concentrate, and to possess, store, transfer, import, use, and dispose of nuclear substances and radiation devices.
4. The licensed activities at the Key Lake Operation were the subject of several environmental impact assessments. The assessments were done in 1979 for the original open pit mine and mill, in 1994 for the conversion of the mined out Deilmann pit into a tailings management facility, in 1995 for milling McArthur River ore, and in 2009 for the new oxygen, steam and acid plants. These environmental assessments concluded that, after taking mitigation measures into consideration, Cameco's Key Lake Operation is not likely to cause significant adverse environmental effects.
5. This request for licence renewal includes only the ongoing activities at the Key Lake Operation site. This request does not include activities related to an application to expand tailings capacity and increase production, which will be considered through a separate licensing process. The separate licensing process includes the joint Federal/Provincial environmental assessment, which is not yet completed. Once completed, the Environmental Assessment Screening Report will be available for a formal 30-day public review and further consideration by the Commission.

Issue

6. 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 activities that the licence would authorize;

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.

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

7. The Commission, in making its decision, considered information presented for a public hearing held on October 1, 2 and 3, 2013 in La Ronge, Saskatchewan. 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 CNSC staff (CMD 13-H13) and Cameco (CMD 13-H13.1). The Commission also considered oral and written submissions from 27 intervenors (see Appendix A for a detailed list of interventions). The hearing was webcasted live via the CNSC Web site, and video archives are available for a three-month period following this decision. A *Summary Record of Proceedings, Including Reasons for Decision*, was issued on October 29, 2013.

2.0 DECISION

8. 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 also satisfied 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 the Uranium Mill Operating Licence issued to Cameco Corporation for its Key Lake Operation located in northern Saskatchewan. The renewed licence, UMLOL-MILL-KEY.00/2023, is valid from November 1, 2013 until October 31, 2023, unless suspended, amended, revoked or replaced.

9. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 13-H13.
10. With this decision, the Commission directs CNSC staff to provide annual reports on the performance of the Key Lake Operation, as part of the CNSC's Annual Report on

³ Statutory Orders and Regulations (SOR)/2000-211.

Nuclear Fuel Cycle Facilities in Canada. CNSC staff shall present these reports at public proceedings of the Commission. A special focus on the environmental performance of the Key Lake Operation with emphasis on releases to air, water and soil is expected to be part of the annual reports. Some of the proceedings may be held in Saskatchewan, with public participation.

11. The Commission accepts the revised financial guarantee for decommissioning of the Key Lake Operation site.
12. The Commission requests that Cameco prepare timeline estimates for completion of each of the major reclamation and decommissioning activities planned at the Key Lake Operation site. Updates of the remediation and decommissioning plans and timelines will be presented as part of the aforementioned annual reports by CNSC staff on the performance of the Key Lake Operation.
13. The Commission accepts CNSC staff's recommendation regarding the delegation of authority in the Licence Conditions Handbook (LCH). The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.

3.0 ISSUES AND COMMISSION FINDINGS

14. 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.
15. During the public hearing, the Commission heard from a number of intervenors about the economic benefits and disadvantages of uranium mining and also heard about possible alternatives to nuclear energy. While the Commission appreciates the viewpoints of intervenors on these issues, these issues were deemed to be outside the scope of subjects the Commission is able to consider under the NSCA in arriving at a decision. Therefore, these issues, while important to the local communities and individuals, are not discussed in these reasons for decision.
16. The Commission also heard different viewpoints regarding the process used for the development of collaborative agreements between Cameco and the neighbouring communities. These agreements outline the future business relationship between the parties. The Commission notes that it does not take any position on the process to develop an agreement or on the business interests of the parties. The Commission noted, however, that the agreements contain obligations with respect to communications between the parties which are important as they relate to Cameco ensuring that local communities are informed and consulted about current and future

endeavours. These communications are discussed further in this Record of Proceedings.

17. In their intervention, Sierra Club alleged that the CNSC may be acting contrary to its statutory mandate in regard to Canada's international obligations. The Commission disagrees with this submission. The CNSC regulates the nuclear industry by licensing activities only where satisfied 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". The CNSC is not responsible for the implementation of all of the international obligations to which Canada has agreed. While Sierra Club invokes the *Convention on Long-Range Transboundary Air Pollution* and the 1998 Heavy Metals Protocol and Protocol on Persistent Organic Pollutants, it is the *Canadian Environmental Protection Act, 1999*⁴ (CEPA) that deals specifically with international air pollution. The CNSC does not administer the CEPA. In addition, the *Declaration on the Protection of the Arctic Environment*, the Arctic Environmental Protection Strategy, the Arctic Monitoring and Assessment Program or the Arctic Council, do not create binding obligations on Canada or the CNSC as it relates to this application for renewal.
18. In regard to the Espoo Convention, the obligation to conduct environmental assessments has been implemented under the *Canadian Environmental Assessment Act 2012* (CEAA 2012)⁵. Thus, it is the Environment Minister who determines which projects require an EA to be conducted by the CNSC, and this is done for projects that have the potential to cause adverse environmental effects. In the matter at hand, the Commission concluded that an EA was not required under the CEAA 2012 for the licensing actions that were considered by the Commission. More details on this topic are provided in section 3.15 of this document.

3.1 Management System

19. The Commission examined Cameco's Management System which covers the framework that establishes the processes and programs required to ensure that the Key Lake Operation achieves its safety objectives and continuously monitors its performance against these objectives and fosters a healthy safety culture.
20. CNSC staff reported that, during the current licensing period, it has noted and verified improvements in Cameco's management system at the Key Lake Operation. CNSC staff rated this safety and control area (SCA) as satisfactory.

⁴ S.C. 1999, c.33.

⁵ S.C. 2012, c.19, s.52 (hereinafter, "CEAA 2012")

3.1.1 Quality Management

21. Cameco informed the Commission that the overall site management system is described in the Key Lake Operation's Quality Management Program (QMP), which addresses the requirements of Cameco's Safety, Health, Environment and Quality Policy. The QMP supports the Mining Facility Licensing Manual that serves as the top-level site document providing a guide to the licensing documents, programs and supporting information.
22. Cameco provided an overview of the continuous improvement initiatives it has undertaken and completed in the past years and summarized the key areas that it was targeting, including corrective actions and contractor management. With respect to the corrective action process, Cameco stated that all information related to audit findings and incident events are documented within the Cameco Incident Reporting System. The vast majority of non-conformances and events entered into this system were minor issues that did not involve significant risk to the health and safety of people or the environment. The significance of these events is systematically evaluated by management and corrective actions are developed based on these evaluations. Cameco also reviews lessons learned from events that have occurred at Cameco sites and at other nuclear and mining installations.
23. During the current licensing period, CNSC staff monitored and validated Cameco's management system. The inspections were conducted in 2008 and 2009. These inspections were followed by a focused inspection, conducted in 2011, to verify the implementation and effectiveness of Cameco's corrective actions for seven action notices. All seven action notices were closed, and two new action notices were issued to address needed revisions to the design control procedure and improvements to document and record controls. In 2012, one action notice was issued regarding minor deficiencies in design control. Upon CNSC staff's review of corrective measures taken by Cameco, all action notices are now closed. In 2013, CNSC staff completed a review of Cameco's management system and concluded that it meets CNSC requirements.
24. CNSC staff confirmed that Cameco continues to be registered to the CAN/CSA-ISO 14001:04 Environmental Management Systems National Standard of Canada.

3.1.2 Organization

25. Cameco informed the Commission about the structure of ownership of the Key Lake Operation, and explained the organizational structure. Cameco representatives noted that the Key Lake Operation is owned by a joint venture between Cameco (83.3%) and AREVA Resources Canada Inc. (16.7%) and operated by Cameco.
26. Cameco further informed the Commission that the management team at the Key Lake Operation uses a formal change management process to improve workflow processes, material management, operator care and engineering reliability. These activities are tracked and documented through the QMP.

3.1.3 Facility Management

27. Cameco informed the Commission that the Key Lake Operation has been operated as the regional milling facility for McArthur River Operation since 1999, and that the continued investments made in Key Lake Operation infrastructure will support the expected long mine life of the McArthur River Operation. Cameco provided a list of activities that may be undertaken in the future in support of safe, clean and reliable production, and to assure the protection of the environment. Cameco noted that such activities and resulting changes are subject to the regulatory oversight of the CNSC.
28. Cameco further informed the Commission that the oversight of contracted personnel at the Key Lake Operation is guided by the corporate contractor management program. The relevant guidance documents are included in the Key Lake Operation QMP to ensure that contractors are held to the same standards as employees. Cameco stated that the Key Lake Operation has not experienced a contractor lost time injury in over five years.
29. The Commission enquired about Cameco's expectations regarding labour requirements over the next licensing period. Cameco representatives responded that the regular workforce within the company has remained constant since 2009 up until the current period. Cameco representatives added that Cameco expects its regular workforce to remain constant through the upcoming license period. Cameco expects to have, by the year 2017 to 2018, a significant reduction in the number of contractors on site.

3.1.4 Safety Culture

30. Cameco informed the Commission about its activities to maintain a strong focus on safety through active communication and safety-related program documents. Cameco added that a safety culture assessment of Cameco employees at the Key Lake Operation was completed in 2009 by a third-party expert as part of Cameco's corporate safety and health management program. The results indicated that the Key Lake personnel showed a strong willingness to improve and that safety issues were taken seriously.
31. In submissions to the Commission, a number of intervenors, including the Canadian Nuclear Workers Council & Steelworkers 8914, J. Little and D. Buffin, indicated that the safety culture at the Key Lake Operation has improved during the course of the current licence. These intervenors noted that the Key Lake Operation is a safe location to work and that Cameco is continually striving to improve processes and facilities for the benefit of workers, the public and the environment.
32. Some intervenors, including A. Coxworth, stated that culture and language issues could be interfering with communications when First Nations employees wish to address concerns at the site. It was suggested that some First Nations employees may be reluctant to raise issues for fear of their livelihood, or due to limited English language

skills. It was suggested by some intervenors that having a community Elder on site as a form of “ombudsman” may improve communications between First Nation employees and Cameco management.

33. In response, Cameco explained that employees have ready access to a confidential hot line they can use to report concerns. Cameco also noted that concerns may also be raised with their supervisors, the site Occupational Health and Safety Committee representative, or with the company representative in their community to whom they may be better able to communicate in their native language. Cameco stated that the company has a policy of openness with its employees and that employees should not fear that raising issues would impact on their jobs. CNSC staff stated that, during its inspections, it takes the opportunity to speak with employees in confidence, and has not observed any reluctance of Cameco personnel or contractors to raise issues of concern. CNSC staff also stated that it visits the communities on a regular basis where open dialogue on facility performance is observed and encouraged.
34. The Commission enquired about safety culture improvements at Cameco from the employees’ perspective. Intervenors from the Canadian Nuclear Workers’ Council and the United Steelworkers Union (local 8914) responded that, from their perspective, safety culture at the site has improved over the years. They stated that work relationship between their organization and Cameco is good and includes regular communication, joint occupational health and safety meetings, site inspections, as well as daily toolbox meetings and weekly safety meetings where any concerns can be raised. The Union leadership has also regular meetings with the Occupational Health and Safety Committee to discuss safety issues or concerns.

3.1.5 Conclusion on Management System

35. Based on its consideration of the presented information, the Commission concludes that Cameco has appropriate organization and management structures in place and that the operating performance at the Key Lake Operation provides a positive indication of Cameco’s ability to adequately carry out the activities under the proposed licence.

3.2 Human Performance Management

36. Human performance management encompasses activities that enable effective human performance through the development and implementation of processes that ensure licensee staff is sufficient in number in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
37. CNSC staff rated the human performance management SCA as satisfactory.

3.2.1 Training

38. Cameco informed the Commission that it has developed and implemented a standardized, robust and risk-informed training system to analyze and track requirements and to develop and deliver appropriate courses to the employees. The Systematic Approach to Training (SAT) provides corporate oversight and support for training activities and development of appropriate courses. Cameco stated that, through the implementation of SAT, the Key Lake Operation has focused on promoting a high level of compliance with critical safety training. Cameco also noted that, during the latter part of the current licence period, its focus had moved to auditing, reviewing and improving course content and delivery methods for various training programs on site.
39. CNSC staff reported that it had conducted inspections to assess the effectiveness of training processes and verify the implementation of the training program. An inspection conducted in April 2010 resulted in four action notices. All of them were addressed by Cameco to CNSC staff's satisfaction and the action notices were closed. Another inspection was conducted in 2012 and CNSC staff was satisfied with the implementation of SAT as outlined in the commissioning plan. CNSC staff added that it had reviewed the revised 2013 training program document provided by Cameco and found the program to be satisfactory.
40. The Commission sought further information on the degree to which the residents of northern Saskatchewan are being trained for jobs at Cameco's operations. Cameco representatives responded that the percentage of employees from northern Saskatchewan was currently over 50%. Cameco further remarked that it has been steadily increasing its focus on training in all job categories, ranging from entry-level jobs to semi-skilled and skilled jobs. This reportedly includes promoting and supporting education opportunities at various levels, including grade 12, university, technical trades, and technician courses as offered by Northlands College in La Ronge.

3.2.2 Conclusion on Human Performance Management

41. Based on its consideration of the presented information, the Commission concludes that Cameco has appropriate programs in place and that current efforts related to human performance management provide a positive indication of Cameco's ability to adequately carry out the activities under the proposed licence.

3.3 Operating Performance

42. Operating performance includes an overall review of the conduct of the licensed activities and the activities that enable effective performance as well as improvement plans and significant future activities at the Key Lake Operation. CNSC staff reviewed Cameco's operating performance regarding the activities involved in operating the mill and rated it as satisfactory.

3.3.1 Conduct of Licensed Activities

43. Cameco informed the Commission that it had defined operating performance parameters in several programs within the Radiation Code of Practice (RCOP) and Environmental Code of Practice (ECOP).
44. Cameco further informed the Commission that the performance of daily operations at the Key Lake Operation was managed through statistical process control designed to identify operational outliers and develop action plans. Performance indicators were developed and monitored to ensure conformance to performance targets and the safe operation of the facility.
45. Cameco stated its intention to advance the implementation of an operational reliability initiative at the Key Lake Operation over the requested licence period. Operational reliability is documented in the QMP. Cameco utilizes a formal change management process to improve workflow processes, material management, operator care and engineering reliability.
46. CNSC staff reported that, during the current licence period, it had conducted 20 compliance inspections of various aspects of the mill and surface facilities. CNSC staff added that Cameco had addressed all identified issues in a satisfactory and timely manner.
47. CNSC staff conducted the necessary reviews and approvals of the proposed construction projects and concluded that Cameco continues to take necessary precautions including engineering and administrative controls to minimize potential risks and to maintain the integrity of its facilities.
48. The Commission asked Cameco where it looks to learn about and compare itself to best practices for uranium mining and milling operations, particularly in the area of safety and environment. Cameco responded that it conducts benchmarking, including through its own corrective action processes across all of its uranium mining and fuel operations, and through its involvement in organizations such as the World Nuclear Association.

3.3.2 Conclusion on Operating Performance

49. Based on the above information, the Commission concludes that the operating performance at the facility provides a positive indication of Cameco's ability to carry out the activities under the proposed licence.

3.4 Safety Analysis

50. Safety analysis is the systematic evaluation of the potential hazards associated with the conduct of a proposed activity or the operation of a facility, and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. It supports the overall safety case of the facility. CNSC staff reviewed this SCA, which includes a general hazard analysis for ongoing operations at the Key Lake Operation. CNSC staff rated Cameco's performance as satisfactory.

3.4.1 Hazard Analysis

51. Cameco informed the Commission that a risk assessment process had been implemented at the Key Lake Operation to identify risks on an ongoing basis and to ensure they are adequately controlled and monitored. The operational specifications for safe operation had been developed since the beginning of operations at the Key Lake site, and were provided to the regulatory agencies in the 1982 Final Safety Report, through a hazard and operability study and through environmental assessments.
52. Cameco further informed the Commission that, during the current licence period, Cameco had developed a corporate standard for the systematic identification and management of risk across the corporation, as parts of the following programs:
- Occupational Health and Safety Program;
 - Radiation Protection Program;
 - Facilities Program
 - Environmental Protection Program
 - Waste Management Program
 - Fire Protection Program, and
 - Emergency Preparedness and Response Program.

Risks associated with day-to-day tasks are assessed and mitigated using various processes and tools.

53. Cameco also informed the Commission that the Key Lake Operation had implemented a systematic review of the operation to assess risks at a high level in order to determine whether a more detailed assessment may be beneficial in some areas. Some areas identified through high level risk assessments requiring more detailed assessments included the condition and operability of the containment sumps within the mill facility and structural integrity assessments of mill infrastructure. As a result of these assessments, action plans were developed to address areas of concern based on the risk level and ease of repair. The Key Lake Operation had incorporated risk assessment into planning for new facilities and processes and used it in when developing design criteria.
54. Cameco noted that, in 2012, the Key Lake Operation adopted the corporate divisional facility change control database. This database, in addition to design control, is used to

ensure that physical changes to the facility are reviewed and approved by the appropriate personnel before being implemented.

55. CNSC staff reported that the Key Lake Operation had been updating site documentation and processes to incorporate the Corporate Risk Management Standard. This standard includes the new risk matrix used to assess and assign risk to all activities and to mitigate the identified hazards. The risk assessment requirements are also included in the Key Lake Operation's change management process. CNSC staff noted that Cameco had conducted the necessary safety analyses to plan, implement and monitor risks related to construction activities, and to implement appropriate mitigation measures.
56. CNSC staff confirmed that Cameco performed safety analyses on an ongoing basis by using job hazard assessments on all non-routine or complex jobs.

3.4.2 Conclusion on Safety Analysis

57. 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.

3.5 Physical Design

58. Physical design includes activities to design the systems, structures and components to meet and maintain their design basis. The design basis is the range of conditions and events taken into account in the design of structures, systems and components of a facility according to established criteria. The specific areas that comprise physical design at the Key Lake Operation include the process infrastructure within the uranium mill, the site water treatment facilities, the engineered tailings management facilities, ore and waste rock storage pads, and various waste rock piles. CNSC staff reviewed Cameco's performance and rated this SCA as satisfactory.

3.5.1 Facility Design

59. Cameco informed the Commission that the physical design of the facilities at the Key Lake Operation is documented in the Key Lake Operation's Mining Facility Licensing Manual, the Facilities Program and the Waste Management Program.
60. CNSC staff confirmed that Cameco uses facility change control and design control to ensure that any physical changes to the facility are reviewed and approved by site management before implementation and that the change management process includes a risk assessment requirement for new designs and design changes.

61. Cameco further informed the Commission about changes and improvements made at the Key Lake Operation during the current licence period to enhance environmental, health and safety performance. During the current licence period, CNSC staff reviewed these changes and found them acceptable.
62. CNSC staff informed the Commission that it had reviewed the design and the commissioning report for the new oxygen, steam and acid plants and found them acceptable for operation in 2013 and beyond. CNSC staff also informed the Commission that it had reviewed and accepted the design for the construction of a new horizontal rotary calciner with a scrubbing system that would reduce uranium and sulphur dioxide emissions to the environment. Construction of the new calciner is underway and is expected to be operational in 2014.
63. The Commission enquired about the production of acid at the plant and its potential impact on the environment. Cameco responded that it can produce up to 300 tonnes per day of concentrated sulfuric acid, and that it has the capacity on site to store 6 000 tonnes of this acid in a fully contained facility. The plant is currently used at slightly more than half-capacity and the acid is used for daily uranium production. The installation of the new calciner would further reduce the emission of sulfur dioxide and uranium, which were already low and well within regulatory limits and licensed approval limits.
64. Cameco provided more details regarding its project to protect the future capacity of the Deilmann Tailings Management Facility (DTMF) by stabilizing the west wall of the DTMF to prevent future incidents of sand sloughing from this area. This project started in 2011 and is progressing as planned. The project should be completed in 2014. CNSC staff confirmed that Cameco had developed and implemented an action plan for the installation of long-term stability measures in the DTMF, as stipulated in the current licence. The Commission accepted the action plan that Cameco submitted in 2009. Cameco has since completed the project earthworks.
65. CNSC staff found that the Key Lake Operation had made significant changes and improvements to the facility, and that these changes had been carried out in accordance with conditions of the licence and Cameco's design and change management procedures.
66. The Saskatchewan Environmental Society suggested that there might be reasons for concern in relation to the design and operation of the reverse osmosis plant. Cameco representatives responded that the reverse osmosis facility at Key Lake is a state-of-the-art facility for treating mine water and releases very high purity effluent. The quality of that water is monitored through routine daily sampling, and the results indicate that the water is consistently within the guidelines for release to the environment.
67. The Commission asked about Cameco's designs for keeping waterfowl and other wildlife out of the tailing ponds. Cameco representatives responded that the company

has a wildlife management program on site and is using multiple levels of control, including inspections, scare cannons, and other means to discourage the use of the site by birds and other wildlife.

3.5.2 Conclusion on Physical Design

68. On the basis of the information presented, the Commission concludes that the design of the Key Lake Operation is adequate for the operation period included in the proposed licence.
69. The Commission is satisfied that Cameco's Key Lake Operation has appropriate mine water effluent treatment capabilities to ensure the protection of the environment.

3.6 Fitness for Service

70. Fitness for Service covers activities that are carried out to ensure the physical condition of systems, components and structures at the Key Lake Operation continue to effectively fulfill their intended purpose. CNSC staff reviewed Cameco's performance and rated this SCA as satisfactory.
71. Cameco informed the Commission about ongoing efforts at the Key Lake Operation to improve the overall maintenance of the operation and supporting systems, and noted that the Key Lake Operation's maintenance program describes the testing, inspection schedules and work procedures required to ensure that systems, components, and structures at the site remain in good operating condition.
72. Cameco representatives stated that the maintenance program had been effective in adopting technology to improve the preventative and predictive maintenance approach, and that various reliability engineering tools were deployed to assess components that are more prone to failure.
73. Cameco representatives added that the Key Lake Operation maintenance department collaborates with the radiation protection department to perform efficient maintenance activities while reducing radiation exposures to workers. Radiation protection equipment calibration is managed through the Cameco radiation protection database.
74. CNSC staff informed the Commission that the Key Lake Operation had adequately maintained, inspected and tested facility systems and components during the current licence period. CNSC staff added that Cameco has a facility change procedure in place to control and record changes to its facilities. CNSC staff noted that Cameco's maintenance group organized and stored information about the Key Lake Operation equipment and facilities on a computerized system to coordinate routine, predictive and preventative maintenance. CNSC staff stated that Cameco conducted various types of inspection, testing and maintenance activities during the current licence period.

75. CNSC staff reported that, during the current licence period, it inspected and reviewed different aspects of the maintenance program. Cameco addressed the resulting action notices in a satisfactory manner and all of them were closed.
76. CNSC staff further reported that it performed an inspection of the facility in 2012 and concluded that the Key Lake Operation had adequately maintained, inspected and tested facility systems and components.
77. The Commission sought more information regarding inspection and repairs of liners and ponds to prevent leaks to the environment, and enquired about the verification of liners. Cameco representatives responded that sumps are verified by hydrostatic tests and liners are visually inspected by a third party.
78. The Commission is satisfied with Cameco's programs for the inspection and life-cycle management of key safety systems. Based on the above information, the Commission concludes that the equipment as installed at the Key Lake Operation is fit for service.

3.7 Radiation Protection

79. As part of its evaluation of the adequacy of the provisions for protecting the health and safety of persons, the Commission considered the past performance of Cameco's Key Lake Operation in the area of radiation protection. The Commission also considered the radiation program at the Key Lake Operation to ensure that both radiation doses to persons and contamination are monitored, controlled and kept as low as reasonably achievable (ALARA) with social and economic factors taken into consideration.
80. The *Radiation Protection Regulations*⁶ require licensees to establish a Radiation Protection Program (RPP) to keep exposures ALARA through the implementation of a number of controls, including management control over work practices, personnel qualification and training, control of occupational and public exposures to radiation, and planning for unusual situations. The *Radiation Protection Regulations* also prescribe dose limits for workers and members of the public. CNSC staff reviewed Cameco's performance and rated this SCA as satisfactory.
81. Cameco informed the Commission that the Key Lake Operation's RPP and Radiation Code of Practice (RCOP) describe how the site manages radiation protection issues, meets applicable regulatory requirements and keeps radiation exposures in accordance with the ALARA principle. Through an ALARA program, the Key Lake radiation department analyzes the effectiveness of awareness programs such as the site's High 5 program, which examines the operation's most exposed workers, and tests out ideas for additional mitigation measures.
82. CNSC staff informed the Commission that it had reviewed Cameco's radiation protection and monitoring programs, as well as the application of the ALARA principle

⁶ SOR/2000-203

in the milling of high-grade ore. CNSC staff stated that Cameco has a RPP and RCOP in place at the Key Lake Operation and conducts regular radiological monitoring, dosimetry, contamination control and long-lived radioactive dust exposure control.

83. CNSC staff informed the Commission about its site inspections. CNSC staff stated that it had reviewed and verified Cameco's corrective actions, and closed the action notices resulting from these inspections. CNSC staff also stated that, through desktop reviews and inspections, it had noted improvements in the Key Lake RP program.

3.7.1 Public Radiation Exposure

84. Some intervenors, including D. Dewar, C. Paul, and the Committee for Future Generations, provided anecdotal information that cancer rates in northern Saskatchewan communities are high and that rates are attributable to the uranium mining industry.
85. In response to the Commission's questioning of this assertion, the Public Health Officer indicated that the greatest risk to developing cancer does not come from uranium mining but from tobacco smoking and that lung cancer rates, in both men and women, are elevated in northern Saskatchewan compared to southern Saskatchewan. During discussion of background radiation, the Public Health Officer noted that levels of background radiation vary from one locale to another and that background radiation levels in northern Saskatchewan are lower than in southern Saskatchewan because of the differences in soils and ground structure.
86. Some intervenors, including the Prince Albert Grand Council, English River First Nation, Sierra Club Canada and the Committee for Future Generations, expressed concern that radiation exposure to members of the public comes from the contamination of country foods including fish, wildlife and berries. Cameco representatives and CNSC staff indicated that studies conducted in support of the human health risk assessments have shown that country foods taken from or near the mine site have been shown to be free of contamination and that country foods are as safe as supermarket foods. The Medical Health Officer indicated that ongoing monitoring of country foods is important since these foods are vital to enabling the local populations to maintain a healthy diet and their lifestyle. He stated that there is no indication that country foods are contaminated or that they are causing any health problems. With respect to those studies, CNSC staff referred specifically to the work of the community-based Athabasca Working Group, the Province of Saskatchewan's Eastern Athabasca Regional Monitoring Program, and other northern dietary surveys (e.g., Hatchet Lake).

3.7.2 Worker Radiation Exposure

87. Cameco stated that the primary radiological hazards at the site are gamma radiation, radon gas and its progeny, and long-lived radioactive dust. Cameco further informed

the Commission that direct reading dosimeters are used to measure doses received by the workers, and that continuous working level monitors are located in nine locations throughout the milling facility to provide continuous monitoring of radon progeny. Cameco further stated that the key performance measurements for radiation protection include the average annual effective dose, maximum annual individual effective dose, and average full-time equivalent dose. Cameco added that, during the current licence period at the Key Lake Operation, the full-time equivalent dose remained consistently below 2.0 mSv/y (milliSieverts per year), which is well below Cameco's annual target of 20 mSv/y and the regulatory limit of 50 mSv/y. The maximum annual individual effective dose received by a worker since 2008 was 9.14 mSv/y. CNSC staff confirmed that the annual doses to workers at the Key Lake Operation remain well below the regulatory limit even with increases in uranium production.

88. Cameco noted that, in recent years, only one or two reportable exceedances of action levels or administrative levels, well below regulatory limits, had occurred per year. It is expected that facility improvements and efficient analysis of work procedures would result in reduction of doses received by the workers, in addition to a reduction of reportable radiation levels exceedances. CNSC staff confirmed that, during the current licence period, there were six exceedances of the RCOP action levels set for Key Lake Operation at 1mSv effective dose per week. CNSC staff presented reports to the Commission for each of these events, and noted that Cameco had made appropriate changes to its procedures and equipment involved in these events to prevent reoccurrence and reduce risks of exposure. CNSC staff stated that it was satisfied with investigation findings and follow-up corrective actions taken by Cameco for all the events.
89. C. Paul, in her intervention, argued that the notion of "reasonably achievable" as the basis of the ALARA principle is not an appropriate objective for reducing radiation exposures; rather the intervenor argued that radiation doses should be "as low as possible" and that all available means, irrespective of cost, should be made to achieve this. In response, CNSC staff indicated that ALARA is the universally accepted principle in the field of Radiation Protection to ensure that radiation doses are kept very low, and well below that which may cause harm to human health. Application of the ALARA principle has been shown to be effective at sites regulated by the CNSC.

3.7.3 Conclusion on Radiation Protection

90. 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. The Commission is of the view that the use of the ALARA principle is an effective method used, among others, to provide protection of workers against radiation.

3.8 Conventional Health and Safety

91. Conventional Health and Safety covers the implementation of a program to manage workplace safety hazards. This program is mandatory for all employers and employees in order to reduce the risks associated with conventional (non-radiological) hazards in the workplace. This program includes compliance with Part II of the *Canada Labour Code*⁷ and conventional safety training. CNSC staff rated Cameco's performance in this SCA as satisfactory.
92. Cameco informed the Commission about the safety program at the Key Lake Operation and noted that the responsibility for the health and safety of people at the Key Lake site is managed through corporate and site-specific safety and health management programs. These programs are modeled on the Occupational Health and Safety Advisory Services international standard OHSAS 18001. The Key Lake Operation's contractor management program provides a mechanism to reduce the risk to contractors by providing better management and oversight. Cameco also informed the Commission about activities made to improve safety in different areas.
93. Cameco reported that the Key Lake Operation's Occupational Health and Safety Committee conducts area inspections, addresses workers' concerns during regular meetings, and provides information to management and the provincial Ministry of Labour Relation and Workplace Safety. The latter conducts four to six separate inspections of the Key Lake Operation each year, which are attended by the members of the Key Lake Operation's Occupational Health and Safety Committee.
94. Cameco noted that the Key Lake Operation's safety department provides training of employees and supervisors, and maintains a pro-active schedule to ensure that all individuals are receiving the safety training required for their jobs. It also undertakes a planned inspection program which covers various production areas twice a week and tracks the progress on corrective actions. These inspections increase operator and supervisor knowledge, and instruct them how to identify, mitigate or eliminate hazards in the workplace.
95. Cameco provided data on the lost time injuries and compared them to corresponding averages for the Saskatchewan mining industry. The data comparison shows that the frequency and severity of lost time injuries was comparable to the Saskatchewan mining industry for 2008 and 2009, which had improved during the second half of the licence period. It was noted that the number of people working at the Key Lake Operation had increased during the current licence period as a result of a number of construction projects. CNSC staff reported that Cameco effectively manages contractor safety risks, and there had not been a contractor lost time injury in a period of over five years.
96. CNSC staff stated that it had reviewed the investigation reports for all lost time injuries from 2008 to 2012, and verified that corrective actions have been implemented in

⁷ R.S.C., 1985, c. L-2

conjunction with Saskatchewan Ministry of Labour Relation and Workplace Safety. The lost time injuries are discussed and reported to the Commission every year as part of the CNSC Staff Report on the Performance of Canadian Uranium Fuel Cycle and Processing Facilities.

97. CNSC staff stated that Cameco's reporting culture had improved, and that Cameco's incident reporting system is an effective tool to facilitate and track accident investigations and assign corrective actions. CNSC staff added that the Saskatchewan Ministry of Labour Relation and Workplace Safety also carried out safety related inspections during the current licence period. All safety related incidents were properly investigated in a timely manner and the resulting reports were acceptable to both CNSC staff and Saskatchewan Ministry of Labour Relation and Workplace Safety.
98. CNSC staff reported that conventional health and safety is included in all compliance inspections. CNSC staff had observed and verified safety practices at Key Lake Operation and found that Cameco had carried out routine work and revitalization projects without major safety incidents. CNSC staff stated that all safety incidents were reported in a timely manner and in compliance with relevant regulations. CNSC staff also stated that Cameco met all its key performance indicators targets in 2012.
99. The Canadian Nuclear Workers Council and Steelworkers 8914 indicated that the safety culture at the Key Lake Operation is excellent, that workers are provided with appropriate training to ensure that they understand their roles and responsibilities and that the facility is a safe place to work. The intervenor also stated that all workers at the Key Lake Operation are provided with information on their rights and obligations as workers and that reporting problems or concerns is covered. This intervenor also indicated that workers are able to refuse work that they feel may be unsafe until such time as Cameco takes action and confirms that the work would be safe. The intervenor indicated that no concerns relating to a refusal on the part of Cameco to consider issues have been brought to the attention of union management.
100. The Commission questioned Cameco if it looks to other organizations to better understand and adopt industry best practices for assuring worker health and safety. In response, Cameco stated that it looks for, and shares information on safety practices across all of its own mining and other fuel-cycle operations, as well as through its involvement with organizations such as the Saskatchewan Mining Association, the Mining Association of Canada, and the World Nuclear Association.
101. The Commission is of the opinion that the health and safety of workers and the public was adequately protected during the operation of the facility for the current licence period, and that the health and safety of persons will also be adequately protected during the continued operation of the facility.

3.9 Environmental Protection

102. Environmental protection covers Cameco's programs that identify, control and monitor all releases of radioactive and hazardous substances from facilities or as the result of licensed activities and their effects on the environment. It includes effluent and emissions control, environmental monitoring and estimated doses to the public. CNSC staff rated Cameco's performance in this area as satisfactory.
103. Cameco informed the Commission that the environmental protection at Key Lake Operation is assured by the site specific ISO 14001-certified Environmental Management System. All operational licensed activities are systematically identified, controlled and monitored by the Environmental Protection Program (EPP) and the Environmental Code of Practice.
104. Cameco also informed the Commission that it had submitted a Status of the Environment Report (SOE) for the Key Lake Operation in 2010, which identifies trends, changes and the overall condition of the environment. The report had found that the environmental effects of the Key Lake operation were within the levels previously predicted, which validates the effectiveness of the Key Lake Operation's EPP.
105. CNSC staff stated that it had reviewed the SOE and confirmed that Cameco's environmental monitoring program has been effective in assessing the accuracy of environmental risk assessment predictions.
106. CNSC staff reported that it conducted compliance inspections, which included various aspects of environmental protection, during the current licence term. No action notices were issued during those inspections. CNSC staff noted that inspectors from the Saskatchewan Ministry of Environment also performed inspections. All environmentally related incidents were properly investigated in a timely manner and the resulting reports were acceptable to both CNSC staff and the Saskatchewan Ministry of the Environment. After evaluating the Key Lake Operation's policies and the implementation of relevant programs, and after having conducted inspections, CNSC staff rated Cameco's performance in this SCA as satisfactory.

3.9.1 Effluent and Emissions Control

107. Cameco informed the Commission that the Key Lake Operation had reduced releases of uranium (U), molybdenum (Mo) and selenium (Se) to the environment, and provided data for treated effluent discharged to Wolf Lake in the David Creek system. The monitoring program in the David Creek system had been enhanced to measure the effectiveness of the Mo and Se removal circuit. There have been no action level exceedances for Mo or Se concentrations, and these concentrations have been reduced to below the Canadian Council of Ministers of the Environment water quality guidelines in the lower reaches of David Creek. Cameco stated that the annual Mo loadings to Wolf Lake had been reduced by approximately 80%, and Se loadings had

been reduced by 65%. CNSC staff confirmed that, following the installation of the Mo and Se reduction circuit, the concentration of these two elements in treated effluent had been significantly reduced during a period of increasing ore production.

108. Cameco informed the Commission that the sulfur dioxide (SO₂) emissions had been significantly reduced by 95% in 2013 from the operation of the newly constructed and commissioned sulfuric acid plant.
109. CNSC staff explained that liquids from the milling process and the contaminated water collection at the Key Lake Operation is treated, monitored and released to the David Creek system. CNSC staff presented a detailed list of contaminants and their concentrations in treated effluent released to the David Creek system. CNSC staff stated that these contaminant concentrations had been maintained well below the effluent discharge limits, and that there were no exceedances of the environmental action levels contained in the Environmental Code of Practice.
110. In its intervention, Sierra Club Canada stated that regulatory and/or legal limits do not exist for a number of contaminants. CNSC confirmed that this is the case for a limited number of contaminants. In these instances, CNSC staff implements the precautionary principle and releases are controlled and monitored through the use of Action Levels or regulatory levels established in CNSC requirements. CNSC staff further noted that it is involved in initiatives to expand the set of parameters for which limits are established in the federal *Metal Mining Effluent Regulations*⁸ (MMER) (including for selenium for example).
111. Sierra Club Canada discussed at length the release of mercury and cadmium to the environment and whether or not emissions are measured and causing harm. Cameco representatives stated that mercury and cadmium are not associated with their mining of milling process, and indicated that the concentrations were measured and have been found to be generally at, or below detectable levels and therefore do not pose a risk to the environment. CNSC staff confirmed that mercury and cadmium releases are not relevant to the Key Lake Operation.

3.9.2 Environmental Monitoring

112. Cameco informed the Commission that it had developed their environmental effects monitoring (EEM) program into a two-phase investigation of cause (IOC) study, which had examined significant effects to EEM-related endpoints to benthic communities and fish in the David Creek drainage. The IOC study confirmed the previous EEM results for fish. The EEM will continue in 2014, and the submission of an interpretative report is scheduled for June 2015.
113. CNSC staff stated that EEM at Saskatchewan uranium mines and mills is expected to meet the requirements of the MMER, as well as additional requirements from the

⁸ SOR/2002-222

CNSC and the Saskatchewan Ministry of Environment. CNSC staff further stated that Cameco had conducted additional assessments, in cases of higher than predicted contaminant levels in the receiving environment to determine their significance and risk to the environment. The results will be presented in the next Status of the Environment Report, due in 2015, and will be reviewed by CNSC staff and presented in the CNSC Staff Report on the Performance of Canadian Uranium Fuel Cycle and Processing Facilities.

114. Some intervenors, including The Kineepik Métis Local Inc. #9 and the Prince Albert Grand Council, expressed their intention to perform their own environmental monitoring. The Saskatchewan Environmental Society, with reference to recommendations arising from previous federal environmental assessments, argued for a higher degree of independent environmental monitoring that involves a multitude of regulatory, local community, scientific and not-for-profit parties. In response, the Commission asked who else, other than the licensee, monitors the environment and how are the results consolidated and made public. CNSC staff responded that, in addition to its regulatory activities, the Province of Saskatchewan independently conducts monitoring, and that the Northern Mines Monitoring Secretariat involves the local community members in monitoring and sample collection. CNSC staff and the Saskatchewan Ministry of Environment also referred to the Eastern Athabasca Regional Monitoring Program which directly involves local communities. Information from this program, including technical reports, interpretative reports and raw data, is posted on the program public web site. The Environmental Quality Committee was established by the Province specifically to enable direct community engagement. CNSC staff stated that it is considering developing its own monitoring program for uranium mines and mills as part of an independent environmental monitoring program for the full nuclear fuel cycle. In response to further questioning by the Commission, the representative for the Saskatchewan Ministry of Environment expressed a willingness to explore further opportunities for exchange with groups such as the Saskatchewan Environmental Society and academia.
115. Some intervenors, including S. Lawrence, questioned the adequacy of methods applied for environmental monitoring. In response, Cameco described the ecological risk assessment and human health risk assessments that are undertaken in relation to Cameco's operations and stated that the company conducts extensive environmental monitoring programs that include the use of sophisticated scientific and site-specific models. The analytical models are regularly reviewed and updated. CNSC staff stated that it requires that licensees have an integrated program of environmental protection that manages all elements of their monitoring programs. The CNSC, in addition to requiring licensees to develop and maintain Environmental Management Systems that conform to the ISO 14001 international standard, establishes specific requirements for assessing and measuring potential human health and ecological risk through analytical modelling and monitoring. CNSC staff expressed its satisfaction with Cameco's environmental monitoring and risk assessment methods.

116. The Commission received further information from the Saskatchewan Ministry of Environment (MoE) on the environmental monitoring that it is carrying out under the direction of the province. The MoE representative informed the Commission about Saskatchewan's Boreal Watershed Management Strategy and the Eastern Athabasca Regional Monitoring Program. The MoE representative presented the background and explained the purpose, strategy and different ecological aspects of the project. The Commission sought more information regarding sampling distribution of country food samples and whether the results represent average values for the entire region, or if they were more local and community-specific. The MoE representative responded that the province is working with selective communities in the area; however, as the project progresses, more and more communities are involved to provide a larger information basis. The MoE representative added that the samples that were collected so far in the various locations in the reference and exposure sites were safe to eat. CNSC staff stated that some of the exposure sites were in the proximity of uranium mines.
117. Responding to the Commission's question regarding the province's interaction with local communities on its environmental monitoring, the MoE representative noted that the results are presented to the interested communities, and that the communities have shown a high level of acceptance. The program, now in its third year, is expected to continue.
118. The Commission asked if the Eastern Athabasca Regional Monitoring Program is independent from the industry and CNSC. The MoE representative responded that the sampling program is independently reviewed by scientists and by universities, and that all of the data is fully credible. The MoE representative added that the results are publicly available and posted on the project's public web site.
119. The Commission was further assured by the MoE representative that Cameco has and continues to cooperate with the provincial environmental monitoring programs in an open and transparent manner, and that the monitoring results are not currently showing significant environmental effects from Cameco's uranium mining and milling operations.
120. In its intervention, Sierra Club Canada expressed its objection to any use of the 1 mSv human dose limit as a surrogate for environmental protection. In response to the Commission's examination of this statement, CNSC staff explained that, in fact, the 1 mSv human limit is not used for this purpose. CNSC staff explained that much is now known in the field of radioecology and the effects of radiation exposures to non-human biota. That knowledge is applied in the conduct of environmental risk assessments to establish conservative effect thresholds for the protection on non-human populations. CNSC staff actively participates internationally in advancing the science in this area.

3.9.3 Spills

121. Cameco provided data on reportable spills over the current licence period and stated that the risk of spills had been significantly mitigated by the completion of a three-year revitalization of the Deilmann-Gaertner dewatering system. Cameco further stated that a concerted effort to identify and manage spill risks at the Key Lake Operation resulted in improved performance in the last part of the current licence period. The number of reportable spills was reduced to one per year in 2009 and 2010. There were four minor reportable spills that occurred during upgrading of sumps in 2011 due to construction activities. To address this issue, the Key Lake operation developed a Breach of Containment permit process with temporary containment or material diversion measures to mitigate the risk of spills. Since the adoption of this permit process, there have been 29 occasions where containment was breached to accommodate maintenance activities with no reportable spills.
122. Cameco stated that there had been no action items issued by the CNSC, and that several internal and external audits performed on this program have resulted in minor findings that were addressed. These audits have found that the Key Lake Operation EPP is well implemented and meets expectations.
123. CNSC staff stated that it was satisfied with the improvement actions taken to reduce the risk of environmental spills. CNSC staff noted that its concerns regarding the increase in the number of spills in 2011 had been addressed by Cameco with a number of corrective measures. As a result of these corrective measures, there were no reportable spills in 2012 or in the first half of 2013, and CNSC staff was satisfied with the improvement made to reduce the risk of environmental spills.
124. The Commission asked if Cameco takes samples and monitors contamination under the mill building. The Cameco representative responded that Cameco monitors the area around the mill terrace in a number of locations and takes samples whenever it has to breach or remove containment. Cameco representatives noted that they had found no evidence of contamination underneath the facility.

3.9.4 Conclusion on Environmental Protection

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

3.10 Emergency Management and Fire Protection

126. Emergency management and fire protection cover Cameco's provisions for preparedness and response capabilities which exist for emergencies and for non-routine conditions at the Cameco Key Lake Operation. This includes nuclear emergency

management, conventional emergency response, and fire protection and response. After reviewing Cameco's performance related to the SCA, CNSC staff rated it as satisfactory.

127. CNSC staff informed the Commission that it had reviewed Cameco's revised emergency preparedness and response program and fire protection program. CNSC staff found that Cameco had made adequate provision to respond to emergency situations, including fires, and that the programs were acceptable.

3.10.1 Emergency Management

128. Cameco informed the Commission that the emergency response capability at the Key Lake Operation is guided by the Emergency Response Program, which defines actions, organizations, roles and responsibilities for potential emergency situations, and covers all major risks at the Key Lake Operation with emphasis on medical response, facility fires and transportation incidents. Cameco provided details on the equipment; fire protection infrastructure and program changes that had helped improve the Key Lake Operation's emergency response capabilities.
129. Cameco further informed the Commission that the core emergency response training program for the Key Lake Operation offers certification for Emergency Response Team (ERT) members and provides them with first responder training for medical emergencies. ERT members are also trained in hazardous materials response, rope rescue and vehicle extrication. ERT members participate in training drills, as well as in the Saskatchewan Mining Association annual competitions that include first aid, practical skills, surface proficiency and firefighting. CNSC staff confirmed that field training includes drills and exercises.
130. Cameco also informed the Commission that, in response to a CNSC request, it had retained the services of a third-party expert to review the company's emergency response measures following the Fukushima event. The review did not find significant health, safety or environmental risks, and no significant gaps were identified in the design of facilities with respect to their ability to withstand natural disasters. Cameco also conducted exercises to test its response capabilities to multiple natural events. CNSC staff reported that all action items resulting from the licensee's review have been closed.
131. CNSC staff reported that Cameco uses best practices in maintaining qualified staff at the Key Lake Operation. The core competencies for all active members are asserted through the Saskatchewan Office of the Fire Commission and medical first responder certifications. Specific skills are tested through mobilization of the ERT for events such as medical emergencies and transportation of ill or injured personnel, rescue drills, fire drills with search and rescue, and ventilation and fire suppression activities.

3.10.2 Fire Protection

132. Cameco informed the Commission about the Key Lake Operation Fire Protection Program (FPP), which is aligned with requirements of the *National Fire Code of*

Canada, 2005 (NFCC) and focuses on the identification of fire risks and fire system inspection, testing and maintenance requirements. Cameco also informed the Commission that it had retained the services of a third party expert in the field of fire hazard and risk assessment in the nuclear industry to support the implementation of the FPP and achieve full compliance with the NFCC.

133. Cameco reported that the assessment in the area of fire hazards resulted in a baseline Fire Hazard Assessment (FHA) and identified the need for some improvements within the facilities. CNSC staff informed the Commission that it had reviewed Cameco's FHA report and found it acceptable.
134. CNSC staff reported that, during the current licence period, it had reviewed required fire protection reports and conducted compliance inspections. CNSC staff stated that Cameco had addressed action notices and recommendations arising from compliance inspections in a satisfactory and timely manner. CNSC staff added that the Saskatchewan Ministry of Labour Relation and Workplace Safety had conducted regular inspections and indicated that Cameco was in compliance with requirements for a facility of this type.

3.10.3 Conclusion on Emergency Management and Fire Protection

135. Based on the above information, the Commission concludes that the fire protection measures and emergency management preparedness programs in place and that will be in place, at the facility are adequate to protect the health and safety of persons and the environment.

3.11 Waste Management

136. Waste management covers the licensee's site-wide waste management program. CNSC staff evaluated Cameco's performance with regards to waste minimization, segregation, characterization, and storage.
137. Cameco informed the Commission that facilities for the collection, processing and storage of waste produced at the Key Lake Operation are managed through the operation's Waste Management Program and related programs and procedures under the Key Lake Operation's QMP.
138. Cameco stated that tailings from the mill are stored in the Deilmann Tailings Management Facility (DTMF), a former open pit mine that was engineered for use as a tailings facility. Tailings from milling prior to that date were stored in the Above Ground Tailings Management Facility (AGTMF), which is presently used for disposal of other contaminated waste. Cameco added that the groundwater well collection system, combined with the reverse osmosis (RO) treatment plant, effectively protects the local receiving environment from the impacts of the DTMF and nearby waste rock piles.

139. With respect to sloughing, which had been an on-going issue discussed at length in past proceedings, Cameco informed the Commission about the plan for extended operation of the DTMF and about activities undertaken to improve the slope stability. To increase the slope stability, the Key Lake Operation is completing a project to cut back the slope of the west wall of the DTMF. The sand removed during this slope stabilization project was hauled to the side of a nearby Deilmann waste rock pile where it will eventually be used for reclaiming that area of the site. As already mentioned in section 3.5 of this Record of Proceedings, the project is expected to be completed in 2014.
140. Cameco further informed the Commission that the waste rock management plan outlines the priorities for progressive reclamation of the waste rock piles as part of ongoing reclamation activity that will continue before site decommissioning. Cameco completed a new site-wide reclamation plan in 2010. The plan is updated every year and is aligned with corporate and regulatory objectives. In 2010, a cover trial program was initiated on the Deilmann North waste rock pile, consisting of two field-scale soil cover trial plots and vegetation trial plots on the surface of the cover trial areas. Final land form and cover design should be ready by 2014; reshaping and grading of the waste rock pile is expected to begin in 2015 followed by preparation for re-vegetation.
141. With respect to the AGTMF, Cameco stated that portions of the AGTMF identified as available for contaminated waste disposal will be used for that purpose, while the progressive reclamation will continue on other portions of the AGTMF.
142. Cameco informed the Commission about its initiatives to reduce the amount of non-contaminated domestic and industrial waste and noted that, during the current licence period, the Key Lake Operation had recycled a total of 1.55 million kg of waste material. In 2012, 41% of clean waste was diverted from the landfill and recycled off site.
143. CNSC staff reported that it had regularly inspected waste management at the Key Lake site and that all related action notices had been satisfactorily addressed by Cameco and were closed. CNSC staff noted that, during the 2008 Key Lake licence renewal, the implementation of Cameco's waste management program was rated as below requirements, based on the deficiencies regarding a Waste Rock Management Plan for the Deilmann North Waste Rock Pile (DNWRP) and the DTMF issue of pit wall sand sloughing. During the current licence period, Cameco submitted test results for hydrology and vegetation growth monitoring, and DNWRP management plan for a vegetated 'in-situ cover', which was reviewed and accepted by CNSC staff. The results from the cover tests and vegetation establishment will be used in the development of Cameco's final detailed cover design expected in 2014.
144. CNSC staff stated that Cameco had undertaken significant activities to address pit wall sand sloughing problems at the DTMF, and that CNSC staff will continue to verify mitigation currently being undertaken to address these problems. CNSC staff added that it reviews the AGTMF during regular compliance inspections to verify that the facility is operating as designed, and will continue to review progress of long-term solutions for decommissioning the AGTMF.

145. With respect to non-contaminated wastes, CNSC inspections found that wastes are being disposed of in an appropriate manner in approved facilities. CNSC staff noted that Cameco has a '4 R' waste management program to reduce, reuse, recycle and recover wastes.
146. Based on the above information and considerations, the Commission is satisfied that Cameco is safely managing waste at the Key Lake Operation.

3.12 Security

147. Security covers the programs required to implement and support the security requirements stipulated in the relevant regulations and the licence. This includes compliance with the applicable provisions of the *General Nuclear Safety and Control Regulations*⁹ and the *Nuclear Security Regulations*¹⁰.
148. Cameco stated that the Key Lake Security Program has the controls necessary to ensure the security of nuclear materials on site in accordance with legal requirements. During the current licence term there were no changes made to the Security Program and no reportable incidents with respect to security-related issues.
149. CNSC staff reviewed Cameco's performance regarding this CSA and rated it as satisfactory.
150. The Commission is satisfied that Cameco's performance with respect to maintaining security at the facility has been acceptable.
151. The Commission concludes that Cameco has made adequate provisions for ensuring the physical security of the facility, and is of the opinion that Cameco will continue to make adequate provisions during the proposed licence period.

3.13 Safeguards

152. 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 International Atomic Energy Agency (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.

⁹ SOR/2000-202

¹⁰ SOR/2000-209

153. Cameco stated that the Key Lake Operation makes adequate provision for the maintenance of national security and implements international obligations to which Canada has agreed. Cameco provides annual production reports to the CNSC, in accordance with international requirements.
154. Cameco also stated that there were no requests by IAEA inspectors to inspect the Key Lake Operation during the current licence term.
155. CNSC staff confirmed that Cameco submits annual information on its operations to the CNSC, which forms part of Canada's annual declaration to the IAEA regarding the Canadian nuclear fuel cycle. CNSC staff rated this SCA as satisfactory.
156. In its intervention, the Saskatchewan Environmental Society expressed concerns about Cameco's possible sales of uranium to India, stating that India refuses to sign the Nuclear Non-Proliferation Treaty. The Commission notes that a Canada-India Nuclear Cooperation Agreement came into force in September 2013, which allows Canadian companies to export nuclear items for peaceful uses, in accordance with Canada's nuclear non-proliferation policy. The CNSC will be responsible for the implementation of the Agreement, ensuring that Canadian exports only go to facilities in India under International Atomic Energy Agency safeguards.
157. Based on the above information, the Commission is satisfied that Cameco has made and will continue to make adequate provisions in the areas of safeguards and non-proliferation at the Key Lake Operation that are necessary for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

3.14 Packaging and Transport

158. Packaging and transport covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility. The Key Lake Operation must adhere to the *Packaging and Transport of Nuclear Substances Regulations*¹¹ and Transport Canada's *Transportation of Dangerous Goods Regulations*¹² for all shipments leaving the facility.
159. CNSC staff assessed Cameco's performance in this SCA and found that Cameco has a program in place for the safe packaging and transport of radioactive materials. CNSC staff rated it as satisfactory.
160. Cameco informed the Commission that the Key Lake Operation receives shipments of uranium ore slurry and mineralized waste rock from the McArthur River Operation. Uranium oxide (U₃O₈) is packaged at the Key Lake Operation for transport to Cameco's Blind River refinery and other customers. On average, the Key Lake

¹¹ SOR/2000-208

¹² SOR/2001-286

Operation receives about 13 shipments of slurry per day, and there are about 11 shipments per day of waste rock in covered trucks.

161. Cameco explained that shipments of finished product from the Key Lake Operation in the form of drummed yellowcake occur on a daily basis. Drums are loaded and secured in dry van semi-trailer loads for shipments to customers in North America, and in sea containers for delivery to overseas customers.
162. Cameco stated that all these activities are conducted in accordance with the Key Lake Operation's Transport and Packaging Program. Cameco stated that it had implemented the recommendation from the CNSC's Safety Notice for the Marine Shipment of Uranium Concentrate. Cameco also stated that it was improving yellowcake packing documentation following specific recommendations by CNSC.
163. During the review period, CNSC staff conducted compliance inspections of the Key Lake Operation and found that the transport and packaging program and associated procedures complied with regulatory requirements. Cameco addressed all identified minor deficiencies to the satisfaction of CNSC staff. CNSC staff was also satisfied with Cameco's corrective actions taken to address minor incidents reported during the current licence period. None of these incidents resulted in health or radiological effects, or releases to the environment.
164. Based on the above information, the Commission is satisfied that Cameco is meeting regulatory requirements regarding packaging and transport.

3.15 Application of the *Canadian Environmental Assessment Act*

165. CNSC staff informed the Commission that the activities considered for the Key Lake Operation licence renewal were the subject of environmental assessments completed between 1990 and 2009.
166. CNSC staff also informed the Commission that Cameco had completed environmental risk assessments to evaluate decommissioning strategies for the Deilmann North Waste Rock Pile, and to assess the environmental performance related to recent improvements to the effluent treatment system at the Key Lake Operation. CNSC staff found that both assessments were thorough and met regulatory requirements.
167. The Commission notes that the NSCA provides a strong regulatory framework for environmental protection. Whether an environmental assessment under CEAA 2012 is required or not, the CNSC regulatory system ensures that adequate measures are in place to protect the environment and human health in accordance with the NSCA and its Regulations.

3.16 Aboriginal Engagement and Public Information

3.16.1 Aboriginal Engagement

168. The common law Duty to Consult with Aboriginal communities and organizations applies when the Crown contemplates actions that may adversely affect established or potential Aboriginal or treaty rights.
169. Cameco informed the Commission that, as the majority of the residents of Saskatchewan's North are of Aboriginal origin, including First Nations and Métis, the company's public engagement activities provide them with an opportunity to effectively engage with Aboriginal groups in northern Saskatchewan. Cameco noted that it had previously established satellite offices with community liaison representatives in Pinehouse and English River Denesuline First Nation (ERFN) at Patuanak. The community liaison's role is to serve as Cameco's primary point of contact in the community, to help the community for members to access information about Cameco's operations, and to provide follow-up responses to questions from community members about Cameco's operations.
170. Cameco further informed the Commission that Cameco and AREVA Resources Canada had signed Collaborative Agreements (CAs) with both Pinehouse and ERFN in 2012 as part of a more formalized approach to business arrangements between the companies and communities. The CAs contain a provision for regular two-way dialogue with these communities on matters of environmental interest, and provides support for communities, their business development and their workforce training.
171. CNSC staff informed the Commission that, during the current licence period, it continued to engage with Aboriginal groups and communities throughout northern Saskatchewan, and participated in annual meetings with the communities of Pinehouse and ERFN. In addition to project specific meetings, CNSC staff regularly participated in site tours, and meetings with Northern Saskatchewan Environmental Quality Committee (NS-EQC) members. At these meetings, CNSC staff shared information on topics such as the licensing process, environmental protection and radiation protection using interactive presentations and demonstrations.
172. Intervenors, including Kineepik Métis Local Inc. #9, Prince Albert Grand Council, and the Lac La Ronge Indian Band, stated that First Nations should not merely be consulted but should be part of the decision-making process regarding mine development in the north. It was noted by those intervenors that First Nations people are not just interested parties, but that they have rights to the land and that the mining companies, the CNSC and governments have an obligation to engage them fully and must enable them to have a voice in decisions affecting them and their land. Cameco representatives indicated that, through agreements reached with First Nations communities, there is a partnership that involves consultation in addition to communication and providing information. Cameco representatives indicated that they hope to have agreements in place with all communities.

3.16.2 Public Information

173. A public information program is a regulatory requirement for licence applicants and licensed operators of a uranium mine. Paragraph 3(c)(i) of the *Uranium Mines and Mills Regulations*¹³ requires that licence applications include “the proposed program to inform persons living in the vicinity of the mine or mill of the general nature and characteristics of the anticipated effects of the activity to be licensed on the environment and the health and safety of persons.”
174. Cameco informed the Commission that it has a Public Information Program (PIP) in place which describes communication tools used to support the face-to-face engagement with community stakeholders. The target audience for the Key Lake Operation’s PIP is regional within the larger Northern Administrative District of Saskatchewan, including priority recruitment communities that include Pinehouse, ERFN, and the Lac la Ronge Indian Band.
175. Cameco further informed the Commission that it had implemented a *Public Disclosure Protocol* consistent with the CNSC’s regulatory/guidance document RD/GD 99.3, *Public Information and Disclosure*. The protocol was posted on the Cameco Northern Saskatchewan website.
176. CNSC staff informed the Commission that it had reviewed Cameco’s revised public information and disclosure program and concluded that it meets CNSC requirements. CNSC staff confirmed that Cameco had developed a public disclosure protocol for its northern Saskatchewan operations and made it available to the public on its web site.
177. Cameco reported that public information activities encompass general updates regarding the Key Lake Operation given during the quarterly NS-EQC meeting and the annual Cameco Northern Tour, which includes visits to 11 communities in northern Saskatchewan. Each year, the Key Lake Operation hosted a meeting and a site tour with the NS-EQC where updates on site activities were provided. In addition to these general updates, Cameco provided 27 project-specific updates on the proposed Key Lake Expansion Project.
178. The updates were posted on Cameco’s Northern Saskatchewan website, presented through paid advertising and print articles in publications distributed in Saskatchewan’s north, and were distributed during face-to-face engagement in the north. Cameco measures the effectiveness of the company’s PIPs through polling, and surveys public perceptions of the uranium mining industry twice a year across Saskatchewan. The most recent results in May 2013 indicated that 80% of residents in the province continue to support the uranium mining industry.
179. In its intervention, the Saskatchewan Mining Association (SMA) mentioned that 80% of the public supports the uranium mining industry. The Commission asked for more information on the survey. The SMA representative responded that the survey

¹³ SOR/2000-206

had been conducted by an independent expert in public polling. Cameco representatives noted that the survey had encompassed large sample of population in north Saskatchewan. Cameco representatives added that they have not influenced the content of the survey, and that they order this type of independent survey every year.

180. CNSC staff reported that Cameco continued to engage residents of Saskatchewan's north and maintained open communications with the interested local communities and Aboriginal groups. CNSC staff attended numerous community meetings organized by Cameco with the NS-EQC, the Athabasca Working Group, community leadership groups and other stakeholders having a direct interest in the project.
181. In addition to engagement activities, CNSC staff conducted a research and made a preliminary list of First Nation and Métis groups, organizations and communities that may have an interest in the licensing decision. CNSC staff sent notification letters with the Notice of Hearing and included other information on the licence renewal application, hearing process and available funding for participation to all these groups, organizations and communities.
182. The Commission enquired about Cameco's efforts in providing information to the community. A member of the English River First Nation stated that personnel from Cameco visit their communities several times a year and explain events, company plans and actions for the next ten-year period. An intervenor who works for Cameco, D. Buffin, responded that he provides information regarding activities at the site on an informal basis. Mr. Buffin indicated that he responds to questions from local residents to the best of his ability and added that he is able to provide information in Cree as well as in English. Cameco representatives noted that the company encourages this type of informal communication.
183. CNSC staff informed the Commission that, in addition to public consultation activities, the CNSC provided funding through its Participant Funding Program (PFP) to assist Aboriginal groups, members of the public and other stakeholders to participate in reviewing and commenting on the licence application through written or oral presentations. A Funding Review Committee, independent from the CNSC, reviewed the funding applications received and funding was made available to the following groups and individuals:
 - English River First Nation;
 - Kineepik Métis Local 9, Pinehouse;
 - Prince Albert Grand Council;
 - Mr. Clarence Natomagan;
 - Dr. Rose Roberts;
 - Saskatchewan Environmental Society; and
 - Sierra Club Canada.
184. Some intervenors who received funding under the PFP, including the Saskatchewan Environmental Society, R. Roberts, Kineepik Métis Local Inc. #9, English River First

Nation, and C. Natomagan, indicated that the funding was very helpful in enabling them to participate in the licensing process; however, they expressed concern about lack of funding for participation in annual licence reviews if a 10-year licence were to be awarded. They indicated that the PFP program relates to licence application hearings and not to annual reviews. The Commission indicated that this would be investigated since the intent of the PFP is to enable participation during public proceedings of the Commission.

185. A number of intervenors, including K. Scansen, the Lac La Ronge Indian Band, English River First Nation, and the Committee for Future Generations, expressed the view that, while there is communication from Cameco to local residents and communities, there was little true consultation and meaningful acceptance and use of Aboriginal Traditional Knowledge. Cameco responded that the company encourages dialogue with, and input from, community members with a view to improving the relationship and that this goes beyond providing information.
186. The Committee for Future Generations, in its intervention, expressed concern that the information being provided by Cameco was not sufficiently independent and therefore may not be credible in the eyes of the communities. On the question of independence of information, CNSC staff and other intervenors referred to the directly relevant independent work carried out by the CNSC, Province of Saskatchewan, and independent activities with community involvement such as the Eastern Athabasca Regional Monitoring Program and Athabasca Working Group which confirm that the public health and the environment are not being impacted by Cameco's operations.

3.16.3 Conclusion on Aboriginal Engagement and Public Information

187. Based on this information, the Commission is satisfied that Cameco's public information program meets regulatory requirements. The Commission is also satisfied that Cameco's and CNSC staff's public information activities are effective in keeping the public and Aboriginal communities informed on the facility operations.
188. The Commission acknowledges the efforts made in relation to the CNSC's obligations regarding Aboriginal consultation and the Legal Duty to Consult. The Commission is satisfied that the proposed licence renewal will not cause any adverse impacts to any potential or established Aboriginal or treaty rights and that the consultation activities undertaken for this licence renewal were adequate, given that no changes to the licensed activities have been requested¹⁴.

3.17 Decommissioning Plans and Financial Guarantee

189. The Commission requires that licensees have operational plans for decommissioning and long-term management of waste produced during the life-span of the facility. In

¹⁴ Rio Tinto Alcan v. Carrier Sekani Tribal Council, 2010 SCC 43, [2010] 2 S.C.R. 650 at paras 45 and 49.

order to ensure that adequate resources are available for a safe and secure future decommissioning of the Key Lake Operation site, 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.

190. Cameco stated that its most recent decommissioning plan update had been approved by the Province of Saskatchewan on July 22, 2013 and that the irrevocable standby letters of credit in the amount of \$225.1 million will be issued to the Saskatchewan Ministry of Environment (SMOE) upon approval of the Preliminary Decommissioning Plan (PDP) and Preliminary Decommissioning Cost Estimate by the Commission. Cameco added that it updates these two documents every five years as required by federal and provincial requirements.
191. CNSC staff reported that Cameco had submitted a revised decommissioning plan and cost estimate in 2013 as part of the licence renewal application, and proposed a financial guarantee increase to reflect revised and inflated costs of decommissioning. CNSC staff stated that it had completed a review of the plan and found that it provides sufficient detail and is consistent with regulatory requirements. The Saskatchewan Ministry of the Environment has also reviewed the plan and cost estimate and has accepted the proposed financial guarantee.
192. In their intervention, Kineepik Métis Local Inc., #9, supported the ten-year licence, with a mid-term report and regular updates, and submitted several recommendations. The recommendations, relating to decommissioning and reclamation activities, included direct involvement of the community in the continuing evolution of the “Key Lake Site—Wide Reclamation Plan”, allocation of significant portion of decommissioning, reclamation and waste management activities to the local partners, and a review of the decommissioning plan by a third party. The Commission enquired about the role of third parties in developing the decommissioning plan. CNSC staff responded that it expects licensees to engage the communities and get their input, particularly regarding reclamation and decommissioning activities. The licensee prepares decommissioning plan and engages a third party to verify the plan before it is submitted to the CNSC. CNSC staff then independently reviews the technical aspect of the pre-decommissioning plan, or primary decommissioning plan.
193. Kineepik Métis Local Inc., #9, in its intervention, recommended that decommissioning and progressive reclamation activity work should directly involve the local community partners and that the decommissioning plans should be reviewed by a third party. In response to the Commissions questions on the role of third parties in the review of decommissioning plans and costs, CNSC staff responded that it expects licensees to solicit community input in reclamation and decommissioning activities, and to engage a third party in preparing its plans for regulatory approvals. CNSC staff then independently reviews the technical aspect of plans and cost estimates.
194. A number of intervenors expressed their concerns regarding decommissioning and stated that they were under the impression that Cameco envisions and acts in five-year

increments while First Nations' people look ahead to a time when Cameco will no longer be mining in northern Saskatchewan. They wanted assurance that the mine sites would be left in a manner as close to pre-mining conditions as possible for many generations to come and that this should be part of the decommissioning plans. The Northern Saskatchewan Environmental Quality Committee (NS-EQC) stated that future developments should be designed and planned with final decommissioning in mind. Some intervenors, including the Committee for Future Generations and the Saskatchewan Environmental Society, added that they would like to see a plan for the mine site that continues to decommissioning and beyond. CNSC staff stated that such a long-term post-decommissioning vision is reasonable and is in place for most major nuclear facilities. Cameco representatives stated that the company conducts reclamation activities continuously and will ensure that the sites are left in a stable environmentally safe state. Cameco representatives indicated, however, that, due to uncertainties on future business opportunities, it would be difficult to add precision on the specific activities and schedules beyond that currently contained in its reclamation plans. CNSC staff stated that Cameco has an obligation to leave a site in a stable and environmentally safe condition and that measures are in place to ensure this occurs.

195. The NS-EQC noted that they have seen some evidence of decommissioning and reclamation at the McArthur River Operation site and are encouraged by what they have seen. The NS-EQC would like Cameco to continue its efforts in this regard and invited Cameco to involve local communities in the process.
196. The Saskatchewan Environmental Society expressed concerns regarding the long-term monitoring of tailing areas at the site, after decommissioning and reclamation. The Commission asked for further information on reclamation activities and monitoring of decommissioned sites. Cameco representatives stated that their intent is to eventually decommission the sites leaving the areas as close to the natural environment as possible. Cameco representatives added that areas currently no longer used for mining are actively being reclaimed and returned to a natural state. Cameco representatives further stated that there was ongoing monitoring of all facilities, including already reclaimed areas, which would continue beyond the life of the facilities to ensure that the protective covers on the decommissioned waste areas are not eroding and that the waste sites are stable and performing as designed. CNSC staff confirmed that all decommissioning activities would be verified and that Cameco would continue to be involved after mining had ceased. Additionally, the property would eventually revert to the Government of Saskatchewan for ongoing maintenance (institutional control program). CNSC staff added that there is another fund which serves as a financial assurance put to the side for future generations. Those funds will be established for the in-pit tailings management facilities after decommissioning and reclamation.
197. The Commission asked if the decommissioning fund addresses the transfer of a site to institutional control program and the costs of that program. CNSC staff responded that the decommissioning, including financial guarantees and funds, is a separate process from the institutional control, and that there is a requirement for the funds when the application is put forth for institutional control. The Saskatchewan Ministry of

Environment representative clarified that financial guarantee for decommissioning includes some of the post-closure monitoring costs. After a site is released from the CNSC regulation, an appropriate financial assurance would be established for the expected long term monitoring plan.

198. A number of intervenors commented on historical mine operations in northern Saskatchewan that remain in an unsightly and environmentally unacceptable state years after operations has ceased. Comments were made that mine waste in some instances is contaminating lakes and rivers and that barrels and other debris litter the site, yet no one seems to be taking any action. CNSC staff noted that these “legacy” sites are now under government management and regulatory oversight, and that remediation works are now underway or in development. CNSC staff and Cameco representatives concurred that the site conditions at some historic operations are unacceptable and that, under current practice and regulatory requirements, such problems would not occur today. Cameco stated that it has policies and practices in place to ensure that mining and exploration areas are left in a clean state once an operation ceases. Cameco added that, in the course of their work, they have cleaned up areas left by previous operators. The Commission further confirmed that the poor conditions now being rectified at the other sites referred to by the intervenors would now never be permitted at any site.
199. Based on this information, the Commission considers that the preliminary decommissioning plans and related financial guarantee are acceptable for the purpose of the current application for licence renewal.

3.18 Cost Recovery

200. CNSC staff reported that Cameco is in good standing with the Canadian Nuclear Safety Commission with respect to the payment of licensing fees for its operation at Key Lake.

3.19 Licence Length and Conditions

201. Cameco requested the renewal of the current operating licence for a period of ten years. CNSC staff recommended the renewal of the licence for a period of 10 years, stating that Cameco is qualified to carry on the activities authorized by the licence.
202. CNSC staff informed the Commission that it had implemented a process of licence reform to improve the clarity and consistency of CNSC requirements and to streamline the administration of CNSC licences while maintaining adequate regulatory oversight. The proposed licence is associated with the site-specific Licence Conditions Handbook (LCH). The proposed documents include CNSC staff’s recommendations regarding delegation of authority to persons authorized by the Commission.

203. CNSC staff added that, if a significant event were to occur, information on the event would be provided to the Commission using an Event Initial Report. All activities, including proposed changes, would be governed by the licence and the LCH. Any changes outside of the licensing basis would require the Commission's review and approval through the Commission proceeding.
204. The Saskatchewan Environmental Society stated that a shorter licence term would be more appropriate given the likelihood of Cameco applying for variations or amendments during the term of the licence to deal with issues of process, production, waste management, and expansion of operations. CNSC staff noted that the application for licence renewal does not encompass the proposed expansion, which is considered through a separate licensing process. The separate licensing process comprises the joint Federal/Provincial environmental assessment, which is not yet completed. Once completed, the Environmental Assessment Screening Report will be available for public review and further consideration of the Commission. If the final results of that separate process show that required changes are outside the licensing basis, they would be brought forward to the Commission for a final decision.
205. The English River First Nation expressed the view that if a 10-year term were granted, there should be a mandatory public mid-term review conducted by the Commission with public participation. The Commission sought more details regarding the reporting requirements. CNSC staff stated that it was increasing the reporting frequency by recommending annual reports, instead of a mid-term report after a five-year period. These annual reports would be presented to the Commission for consideration at public meetings. CNSC staff added that a mid-term review would, therefore, not be required if annual reviews were in place.
206. Based on the above information received during the course of this hearing, the Commission is satisfied that a ten-year licence is appropriate. The Commission accepts the licence conditions as recommended by CNSC staff. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority, and notes that it can bring any matter to the Commission as applicable.

4.0 CONCLUSION

207. The Commission has considered the information and submissions of CNSC staff, Cameco 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.
208. The Commission determined that there was no requirement for an Environmental Assessment pursuant to subsection 5(1) of the *Canadian Environmental Assessment Act, 2012*¹⁵ (CEAA). The Commission notes that the NSCA provides a strong regulatory framework for environmental protection. Whether an EA is required or not

¹⁵ S.C. 2012, c. 19, s. 52.

under CEAA 2012, the CNSC regulatory system ensures that adequate measures are in place to protect the environment and human health in accordance with the NSCA and its Regulations.

209. The Commission is satisfied that Cameco meets the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that the Cameco is qualified to carry on the activity that the proposed licence will authorize and that the Cameco 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.
210. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the uranium mill operation licence issued to Cameco Corporation for its Key Lake Operation. The renewed licence, UMLOL-MILL-KEY.00/2023, will be valid from November 1, 2013 until October 31, 2023.
211. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 13-H13.
212. With this decision, the Commission directs CNSC staff to provide annual reports on the performance of the Key Lake Operation, as part of the CNSC's Annual Report on Nuclear Fuel Cycle Facilities in Canada. CNSC staff shall present these reports at public proceedings of the Commission. Special focus on the environmental performance of the Key Lake Operation with emphasis on releases to air, water and soil is expected to be part of the annual reports. Some of the proceedings may be held in Saskatchewan, with public participation.
213. The Commission accepts the revised financial guarantee for decommissioning of the Key Lake Operation site.
214. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority in the Licence Conditions Handbook (LCH). The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.
215. The Commission requests that Cameco prepare timeline estimates for completion of each of the major reclamation and decommissioning activities planned at the Key Lake Operation site. Updates of the remediation and decommissioning plans and timelines will be presented as part of the aforementioned annual reports by CNSC staff on the performance of the Key Lake Operation.

Handwritten signature of Michael Binder in blue ink, written over a horizontal line.

JAN 07 2014

Michael Binder
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

Kineepik Métis Local Inc., represented by V. Natomagan and M. Vermette	CMD 13-H13.2 CMD 13-H14.2 CMD 13-H15.2
Prince Albert Grand Council, represented by L. Hardlotte, J. Tsannie, P. Robillard, A. Charles, J. Tsannie and E. Hansen	CMD 13-H13.3 CMD 13-H13.3A CMD 13-H14.3 CMD 13-H14.3A CMD 13-H15.3 CMD 13-H15.3A
Tavio Morin	CMD 13-H13.4
Candyce Paul	CMD 13-H13.5 CMD 13-H14.4 CMD 13-H15.4
Canadian Nuclear Worker’s Council and United Steelworkers Union (USW) local 891, represented by D. Shier, S. Daigneault, E. Morelli, J. MacEacheran and K. Cartier	CMD 13-H13.6 CMD 13-H13.6A CMD 13-H14.5 CMD 13-H14.5A
Saskatchewan Mining Association, represented by P. Schwann	CMD 13-H13.7 CMD 13-H13.7A CMD 13-H14.6 CMD 13-H14.6A CMD 13-H15.5 CMD 13-H15.5A
Athabasca Basin Development Limited Partnership, represented by G. Gay	CMD 13-H13.8 CMD 13-H14.7 CMD 13-H15.6
Johnson-Shoyama Graduate School of Public Policy	CMD 13-H13.9 CMD 13-H14.8 CMD 13-H15.7
Steve Lawrence	CMD 13-H13.10 CMD 13-H14.9 CMD 13-H15.8
Canadian Nuclear Association, represented by H. Kleb and M. Bernard	CMD 13-H13.12 CMD 13-H14.11 CMD 13-H15.10
Dale Dewar	CMD 13-H13.13 CMD 13-H14.12 CMD 13-H15.11

Dwayne Buffin	CMD 13-H13.14
James Little	CMD 13-H13.15 CMD 13-H14.13 CMD 13-H15.12
Snake Lake Group of Companies, represented by R. Rediron	CMD 13-H13.16 CMD 13-H14.13 CMD 13-H15.13
Rose Roberts	CMD 13-H13.17 CMD 13-H13.17A CMD 13-H14.15 CMD 13-H14.15A CMD 13-H15.14 CMD 13-H15.14A
English River First Nation, represented by M. Black and D. Reynolds	CMD 13-H13.18 CMD 13-H14.15 CMD 13-H15.15
Pinehouse Business North Development Inc., represented by J. Wriston	CMD 13-H13.19 CMD 13-H14.17 CMD 13-H15.15
Kitsaki Management Limited Partnership, represented by R. Roberts	CMD 13-H13.20 CMD 13-H14.18 CMD 13-H15.17
Saskatchewan Ministry of Environment, represented by K. McCullum	CMD 13-H13.21 CMD 13-H13.21A CMD 13-H14.19 CMD 13-H14.19A CMD 13-H15.18 CMD 13-H15.18A
Northern Saskatchewan Environmental Quality Committee, represented by N. Wolverine and S. Boyes	CMD 13-H13.22 CMD 13-H14.20 CMD 13-H15.19
Saskatchewan Environmental Society, represented by A. Coxworth and P. Prebble	CMD 13-H13.23 CMD 13-H14.21 CMD 13-H15.20
Committee for Future Generations, represented by D. Mihalicz, D. Smith and B. Lee	CMD 13-H13.24 CMD 13-H14.22 CMD 13-H15.21
Clarence Natomagan	CMD 13-H13.25 CMD 13-H14.23 CMD 13-H15.21

Sierra Club Canada, represented by J. Bennett and C. Elwell	CMD 13-H13.26 CMD 13-H13.26A CMD 13-H14.24 CMD 13-H14.24A CMD 13-H15.23 CMD 13-H15.23A
Lac La Ronge Indian Band, represented by Chief Cook-Searson	CMD 13-H13.27 CMD 13-H14.25 CMD 13-H15.24
Kirstin Scansen	CMD 13-H13.28 CMD 13-H14.26 CMD 13-H15.25