Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Record of Decision

DEC 21-H2

In the Matter of

Applicant	Cameco Corporation
Subject	Application for the Renewal of the Uranium Mine Licence for the Cigar Lake Operation
Public Hearing Dates	April 28-29, 2021
Record of Decision Date	June 24, 2021

RECORD OF DECISION – DEC 21-H2

Applicant:	Cameco Corporation
Address/Location:	2121 – 11th Street West, Saskatoon SK, S7M 1J3
Purpose:	Application for the Renewal of the Uranium Mine Licence for the Cigar Lake Operation
Application received:	November 18, 2019
Dates of public hearing:	April 28-29, 2021
Location:	Virtual Hearing
Members present:	R. Velshi, Chair T. Berube S. McKinnon
Secretary:	M. Leblanc
Recording Secretaries:	C. Moreau and M. McMillan
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Intervenors	
See appendix A	
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Licence: Renewed

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1.0 INTRODUCTION

1. Pursuant to subsection 24(2) of the *Nuclear Safety and Control Act* (NSCA), Cameco Corporation (Cameco) has applied to the Canadian Nuclear Safety Commission[1] (CNSC) for the renewal of the uranium mine operating licence for the Cigar Lake Operation (CLO) located approximately 660 kilometres north of Saskatoon, Saskatchewan. Subsection 24(4) of the NSCA provides the conditions under which the Commission may renew a licence following receipt of an application.

2. The current licence, UML-MINE-CIGAR.01/2021, issued on July 1, 2013 and amended on November 13, 2020, authorizes activities including final commissioning of the CLO and transition to commercial production. The current licence expires on June 30, 2021. Cameco requested a licence renewal for a period of 10 years.

3. The CLO is the second largest high-grade uranium mine in the world and has been in operation since 2015. The CLO consists of an underground mine and surface support facilities, including freeze plants, an ore slurry loadout facility, a water treatment plant, and lined waste rock pads.

4. The CLO is operated by Cameco on behalf of a joint venture owned by Cameco (50.025%), Orano Canada Inc. (Orano) (37.1%), Idemitsu Canada Resources Ltd. (7.875%), and TEPCO Resources Inc. (5%).

Issues

5. In considering Cameco's application to renew the licence for CLO, the Commission is required first to decide whether and what requirements the *Impact Assessment Act* (IAA) imposes in relation to the activities sought to be authorized in this application. Satisfying any such requirements is generally a prerequisite to licensing.

6. Under the NSCA, the Commission must determine:

   a) whether Cameco is qualified to carry on the activities that the licence renewal would authorize; and

   b) whether, in carrying on those activities, Cameco would adequately provide 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

7. As an agent of the Crown, the Commission recognizes its role in fulfilling the Crown's constitutional obligations, and in advancing reconciliation with Canada's Indigenous peoples. The Commission's responsibilities include the duty to consult and, where appropriate, accommodate Indigenous interests where the Crown contemplates conduct

[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.

which may adversely impact potential or established Indigenous or treaty rights.[2] As such, the Commission must confirm whether the duty to consult is engaged by this licence renewal of authorized activities and, if it is, whether the duty has been satisfied.

Public Hearing

8. On October 13, 2020, a *Notice of Public Hearing and Participant Funding* was published for this matter.

9. The Commission, in making its decision, considered information presented for a public hearing held virtually on April 28-29, 2021. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure* (the Rules). Pursuant to section 22 of the NSCA, the President of the Commission established a panel over which she would preside, including Commission Members Dr. Berube and Dr. McKinnon, to decide on the application. The Commission considered written submissions and heard oral presentations from Cameco (CMD 21-H2.1), CNSC staff (CMD 21-H2), and 31 intervenors.[3] The hearing was webcast live via the CNSC's website, and archived on the CNSC's website.

Mandate of the Commission

10. Many intervenors provided the Commission with information about the economic impact of the CLO. The Commission notes that, as the regulatory authority over nuclear matters in Canada, it has no economic mandate and does not base its decisions on the economic impact of a facility. The health, safety and security of people, the protection of the environment, national security, and the implementation of the international obligations to which Canada has agreed are the purposes that guide the Commission in its regulatory decision-making, in accordance with the NSCA.

2.0 DECISION

11. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Decision*, the Commission concludes that Cameco is qualified to carry on the activity that the licence would authorize. The Commission is satisfied that Cameco, in carrying on that activity, 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. Therefore,

[2] Haida Nation v. British Columbia (Minister of Forests), 2004 SCC 73; Taku River Tlingit First Nation v. British Columbia (Project Assessment Director), 2004 SCC 74
[3] See Appendix A for a list of interventions

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the Uranium Mine Licence issued to Cameco Corporation for its Cigar Lake Operation located in northern Saskatchewan. The renewed licence, UML-MINE-CIGAR.00/2031, is valid from July 1, 2021 until June 30, 2031.

12. The Commission removes the text "for the milling of uranium ore", from the authorized licensed activities set out in the draft licence, as discussed in section 4.22.2 of this Decision.

13. The Commission delegates authority for the purposes of licence conditions 3.2 Reporting Requirements, to the following CNSC staff:

- Director, Uranium Mines and Mills Division
- Director General, Directorate of Nuclear Cycle and Facilities Regulation
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

14. The Commission is satisfied that an impact assessment under the IAA was not required for the renewal of the licence.

15. With this decision, the Commission directs CNSC staff to report on the performance of Cameco and the CLO, as part of staff's periodic sector-specific regulatory oversight report (ROR). CNSC staff shall present the ROR at a public proceeding of the Commission, where Indigenous peoples, members of the public and stakeholders will be able to participate.

16. The Commission notes that CNSC staff can bring any matter to the attention of Commission as considered appropriate. The Commission directs CNSC staff to inform the Commission of any changes made to the *Licence Conditions Handbook* as a component of the ROR referred to above.

3.0 APPLICABILITY OF THE *IMPACT ASSESSMENT ACT*

17. The IAA came into force on August 28, 2019. Pursuant to the IAA and the *Physical Activities Regulations* made under it, impact assessments are to be conducted in respect of projects identified as having the greatest potential for adverse environmental effects in areas of federal jurisdiction. Cameco submitted this licence renewal application to the CNSC on November 18, 2019, after the coming into force of the IAA. CNSC staff reviewed the licence renewal application and determined that a licence renewal for an existing uranium mine is not a project designated in the *Physical Activities Regulations*. The Commission agrees with this analysis by CNSC staff, and concludes therefore, that there is no requirement under the IAA for an impact assessment to be

completed. The Commission is also satisfied that there are no other applicable requirements of the IAA to be addressed in this matter.[4]

4.0 ISSUES AND COMMISSION FINDINGS

18. In making its decision, the Commission considered a number of issues and submissions relating to Cameco's qualification to carry out the licensed activities. The Commission also considered 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.

19. Cameco submitted its licence renewal application for the CLO on November 18, 2019. In its consideration of this matter, the Commission examined the completeness of the application and the adequacy of the information submitted by Cameco, as required by the NSCA, the *General Nuclear Safety and Control Regulations* (GNSCR), the *Uranium Mines and Mills Regulations* (UMMR) and other applicable regulations made under the NSCA. The Commission also examined CNSC staff's assessment of Cameco's performance in all 14 safety and control areas (SCAs) and in relation to several other matters of regulatory interest over the current licence period. Section C.1 *Regulatory Basis* of CMD 21-H2 contains a breakdown of applicable sections of the regulations for each SCA.

4.1 Management System

20. The management system SCA covers the framework that establishes the processes and programs required to meet safety objectives, continuously monitor performance against these objectives, and foster a healthy safety culture. Per the UMMR and the GNSCR, Cameco's application included information on Cameco's management system for the activity to be licensed and on its organizational management structure. Throughout the current licence period, CNSC staff rated Cameco's performance in this SCA as "satisfactory".

21. Per its current licence condition 1.1, Cameco is required to implement and maintain a management system for its facilities. CNSC staff reported that Cameco has implemented the CLO management system in accordance with the regulatory requirements identified in the CLO *Licence Conditions Handbook*.

[4] The IAA can impose other requirements on federal authorities in respect of authorizing projects that are not designated as requiring an impact assessment, including projects that are to be carried out on federal lands, or projects outside of Canada. This licence renewal does not engage any such applicable IAA requirements.

22. CNSC staff conducted 11 inspections related to the management system SCA during the licence period, including one focused inspection in 2016.[5] All inspection findings were of low risk significance. Cameco addressed the findings to CNSC staff's satisfaction.

23. Cameco submitted that the Cigar Lake *Quality Management Program* (CGR-QMP), which describes the overall site management system as part of the licensing basis, was developed based on ISO management standards, including ISO 9001 and ISO 14001. The CGR-QMP is reviewed annually for effectiveness through a management review process. CNSC staff submitted that Cameco has taken proactive steps to review and incorporate the requirements of CSA standard N286-12, *Management System Requirements for Nuclear Facilities* into the CLO management system. CNSC staff's assessment determined that the CLO management system meets the requirements of CSA N286-12. CNSC staff committed to verifying implementation of the CSA N286-12 requirements throughout the proposed licence term.

24. CNSC staff evaluated the CLO's organizational structure and verified that there was no issues concerning the licensee's organizational structure and individual responsibilities of positions with oversight on licensed activities. Personnel roles and responsibilities were also reviewed and were determined to be well defined and documented.

25. Asked about how change management processes and reporting requirements are applied with regard to changes to mining plans, CNSC staff specified that operations within the licensing basis were handled under Cameco's management programs. Current licence condition G.2 outlines how the licensee notifies CNSC staff regarding operational, design or policy changes.

26. The Commission is satisfied that Cameco has an appropriate management system in place at the CLO that meets the requirements of CSA N286-12.

4.1.1 Safety Culture

27. Safety culture at the CLO is an interpretation of how Cameco integrates safety into everyday work and interactions. Monitoring safety culture promotes systemic safety improvements over time. Cameco committed to updating its management system documentation to be in compliance with the applicable sections of REGDOC-2.1.2, *Safety Culture* in 2022. CNSC staff confirmed that it will verify Cameco's implementation of REGDOC 2.1.2 during the proposed licence term.

28. Cameco submitted that the CLO has demonstrated a strong incident reporting culture. Throughout the current licence term the majority of incidents at the CLO were of low

[5] Inspections may assess multiple SCAs against compliance verification criteria. Focused inspections assess a single SCA against the applicable compliance verification criteria. Compliance verification criteria are outlined in the *Licence Conditions Handbook.*

severity and there were no high severity incidents. The overall number of incidents decreased once the site transitioned into commercial production.

29. Cameco further submitted that it has measures in place to ensure that all workers understand the hazards of their work and are informed on how to promote a safe work environment. For example, Cameco's Field Leadership Program ensures that management is present in the field to verify safe work practices and provide coaching opportunities where improvements can be made.

30. Asked by the Commission to comment on safety practices at the CLO, a representative from the Saskatchewan Ministry of Labour Relations and Workplace Safety stated that the Ministry had observed positive safety culture at the site. The representative noted that the Ministry is in contact with the CLO site an average of eight times per year and that the CLO had one of the best safety records in the province. The representative from Canadian Nuclear Association also stated, in respect of its intervention (CMD 21-H2.27), that Cameco had one of the top safety cultures among its member companies.

31. Based on the information examined for this hearing, the Commission is satisfied that Cameco has established a strong safety culture at the CLO. The Commission is of the view that Cameco will continue to maintain its safety culture during the proposed licence period, and expects Cameco to implement REGDOC 2.1.2 in accordance with its commitment before end-2022.

4.1.2 Conclusion on Management System

32. The Commission concludes that Cameco has an appropriate management system and organizational structure in place at the CLO that meet regulatory requirements. On that basis, the Commission is of the view that Cameco will continue to meet regulatory requirements and expectations in the proposed licence period.

4.2 Human Performance Management

33. This SCA encompasses activities that enable effective human performance management. This is achieved through the development and implementation of processes that ensure that personnel are sufficient in number, and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties. Per the UMMR and the GNSCR, Cameco's application included information on the human performance management systems in place at the CLO.

34. Per its current licence condition 2.1, Cameco is required to implement and maintain a training program. Throughout the current licence period, CNSC staff rated Cameco's performance in this SCA as "satisfactory". CNSC staff conducted six inspections related to human performance management during the current licence period. All inspection findings were of low risk significance and have been adequately addressed by Cameco.

4.2.1 Personnel Training

35. Cameco submitted that the Cigar Lake *Training Development Program* (CGR-TDP) manages human performance at the CLO. A key component of the CGR-TDP is the systematic approach to training (SAT) which ensures that employees are competent, and provides a means of monitoring and improving employee performance. Guidance for the SAT is provided in REGDOC-2.2.2, *Human Performance Management, Personnel Training*, Version 2. CNSC staff indicated that the compliance verification criteria for this SCA will be updated in the CLO *Licence Conditions Handbook* to include REGDOC 2.2.2.

36. Cameco submitted that all CLO employees have training requirements assigned to them based on their role within the organization. New positions are routinely analyzed for relevant training requirements. Employee training is tracked for completion. Asked about core training for new employees, the Cameco representative explained that core training programs for new employees include radiation protection training and safety orientation training.

37. In relation to T. Roske's intervention (CMD 21-H2.13), the Commission enquired about how Cameco's training program ensures an adequate pool of skilled workers to manage the CLO's mining operation. A Cameco representative reported that Cameco used the SAT to methodically analyze the hazards, create proper procedures, train people and verify their competence in the field to later then turn them into trainers. The Cameco representative added that employees' low turnover rates and diversity in backgrounds also contributed to ensuring an adequate pool of skilled workers to manage the CLO's mining operation.

38. The intervention by T.Roske highlighted Cameco's initiatives to provide women with training, mentorship and leadership opportunities at the CLO. Cameco has also committed to improving facilities onsite for women so that they have the amenities and equipment required to complete their work safely. The Commission acknowledges Cameco's efforts on the inclusion of women in its workforce and encourages Cameco to continue inclusion and accommodation efforts.

39. On the topic of training change-management, particularly for employees who are returning to site after an extended absence, CNSC staff explained that Cameco is required to have a training change-management process in place to ensure that workers have the correct knowledge and skills to carry out their duties. During the current licence period, CNSC staff verified that the training change-management process in place at the CLO is effective.

40. Asked about collaboration with local educational organizations, a Cameco representative explained that Cameco has collaborated with Northern Career Quest since 2008, and that Cameco offers Indigenous apprenticeships in Saskatchewan's

Northern Administrative District. Cameco also has a Northern Saskatchewan Scholarship program.

41. Asked about how Cameco's training program is inspected for compliance, CNSC staff stated that CNSC inspectors verify that Cameco has analyzed the tasks of each job and developed its training program accordingly. CNSC staff submitted that compliance verification activities during the current licence term, including an onsite inspection in 2015, demonstrated that Cameco's training program at the CLO met regulatory requirements.

42. Regarding the intervention from Athabasca Basin Development (CMD 21-H2.15), the Commission enquired about contractors' on-site familiarization at the CLO. The Athabasca Basin Development representative reported that contractors are familiarized with the site through daily and weekly meetings with Cameco's staff, and through quarterly management meetings that discuss safety and environment.

43. Having examined all of the information provided on the record for this hearing, the Commission is satisfied that Cameco has appropriate training programs in place at the CLO that meet the objectives of REGDOC-2.2.2. The Commission is satisfied that the CLO training programs ensure that workers have the knowledge and skills to carry out their duties.

4.2.2 Conclusion on Human Performance Management

44. The Commission concludes that that Cameco has appropriate human performance management programs in place at the CLO that meet regulatory requirements. The Commission is satisfied that Cameco will continue to meet related regulatory requirements and expectations in the proposed licence period.

4.3 Operating Performance

45. The operating performance SCA covers the conduct of licensed activities and the activities that enable effective performance. Per the UMMR, Cameco's application includes information regarding the policies, methods and programs for operating the CLO.

46. Per its current licence condition 3.1, Cameco is required to implement and maintain an operating program for the CLO. Cameco submitted that the Cigar Lake *Mining Operations Program* (CGR-MOP) and the Cigar Lake *Processing Operations Program* (CGR-POP) describe the processes and procedures under which mining and ore processing operations are managed at the CLO. Throughout the current licence period, CNSC staff rated Cameco's performance in this SCA as "satisfactory". Operating performance criteria were included in the majority of CNSC staff inspections over the current licence term.

4.3.1 Conduct of Licensed Activity

47. Cameco described the state of its operations at the CLO over the previous licence period. Cameco explained that Jet Boring System (JBS) units were commissioned during the current licence term to enable effective mining of the CLO ore body for commercial production. Cameco noted that it had met all criteria necessary to achieve commercial production at the CLO in May 2015.

48. CNSC staff submitted that Cameco operated the CLO in accordance with regulatory requirements throughout the licence period. CNSC staff is satisfied with Cameco's operating performance programs, which provide adequate assurance that any modifications to the facility or its operation will remain within the licensing basis.

49. The Commission sought insight into Cameco's plans for the operation of the mine over the proposed licence period. A Cameco representative stated that that the mine life was estimated to span until 2029, though the full known extent of mineralization had not been included in the estimate as it has not been subject to detailed exploration and proven to be economically viable. The Cameco representative stated that future activities to support continued operation of the CLO would not affect the surface footprint of the mine.

50. The intervention from the Saskatchewan Mining Association (SMA) (CMD 21-H2.6) highlighted Cameco's performance at the CLO with respect to safety and environmental protection. The representative from the SMA expressed the view that the CLO was among the best performing mines in Saskatchewan.

4.3.2 Reporting Requirements

51. Per its current licence condition 3.2, Cameco is required to implement and maintain a program for reporting to the Commission, including the reporting of certain events pursuant to the GNSCR. Cameco is also required to submit detailed reports on unplanned events per REGDOC-3.1.2, *Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills*. Cameco annually reports to the CNSC regarding its operational performance, including safety performance at the CLO. Cameco also reports radiation and environmental protection results to the CNSC on a quarterly and annual basis.

52. CNSC staff reported that Cameco had met its licensing requirements in respect of reporting over the licence period. Regarding unplanned events, CNSC staff noted an event involving a worker injury due to a wolf attack in August 2016[6].

53. Based on the information provided, the Commission is satisfied that Cameco met regulatory requirements for reporting over the licence period, including compliance with REGDOC-3.1.2, Volume I. The Commission expects Cameco to continue to maintain its program for reporting.

[6] CNSC staff presented an event report regarding the wolf attack at the September 21, 2016 Commission meeting.

4.3.3 Conclusion on Operating Performance

54. The Commission has relied on the detailed information submitted for this hearing, and is satisfied that Cameco safely operated the CLO during the licence period, in accordance with regulatory requirements. On that basis, the Commission is of the view that Cameco will continue to safely operate the CLO over the proposed licence term. The Commission is satisfied that Cameco will continue to meet its reporting requirements over the renewed licence period.

4.4 Safety Analysis

55. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of the licensed activity or the operation of a facility, and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. Per the GNSCR and the UMMR, Cameco's application includes information about the safety analyses conducted to support the safety case for the CLO. Throughout the current licence period, CNSC staff reviewed this SCA and rated Cameco's performance as "satisfactory".

56. CNSC staff conducted four inspections related to the safety analysis SCA during the licence period, including a focused inspection in March 2017. The focused inspection concluded that Cameco was in compliance with the criteria assessed.

57. Per its current licence condition 4.1, Cameco is required to implement and maintain a safety analysis program. Cameco submitted that the safety analysis for the CLO is derived from past environmental assessments as well as the Cigar Lake *Mining Facility Licensing Manual* (CGR-MFLM) and supporting program documents. Cameco submitted that its approach to risk management is guided by the Cameco Risk Standard and Cameco Risk Policy, which are based on the ISO 31000 standards. Cameco explained that it systematically analyzes risk at the CLO using hazards and operability assessments, job hazard analyses, and field level risk assessments.

58. Cameco identified that the major risks at the CLO are associated with the mining of high-grade uranium ore within water-saturated sandstone. During the current licence term, Cameco has employed mitigation measures at the CLO including freezing the ore deposit and surrounding ground; using the JBS mining process as a non-entry method to separate personnel from the ore; and utilizing ventilation and shielding infrastructure within all underground areas where ore is processed and transported.

59. CNSC staff reported that Cameco is meeting the regulatory requirements to protect both workers and the environment at the CLO as they relate to the development and maintenance of the safety analysis for the facility.

60. Asked about a ‘worst case scenario’ type accident at the CLO, the Cameco representative identified that a large water inflow into the mine would be the worst-case event. Significant inflow events pose a risk of unplanned effluent release to the environment if mitigation measures are not implemented. A Cameco representative stated that the CLO utilizes ground freezing to bulk freeze the ore body and surrounding rock mass to mitigate the potential for water inflow to the mine. The rock mass structure is also assessed for its potential to produce water prior to any development. In the case of an inflow, Cameco submitted that the mine has sufficient pumping capacity and adequate contingency treatment facilities on the surface to capture and treat water prior to release to the environment.

61. The Commission enquired about the impact of a power outage on mine safety. The Cameco representative explained that, in the short-term, power loss would have a minimal impact on the integrity of the bulk ground freeze and would not cause a water inflow concern. Cameco stated that the mine dewatering system has layers of defense in depth in the case of a loss of power, including back-up diesel generators and contingency pumps.

62. The Commission concludes that the systematic evaluation of potential hazards and the preparedness for reducing the effects of such hazards is adequate for the operation of the CLO and the activities authorized under the proposed licence. The Commission finds that Cameco’s safety analysis program for the CLO meets regulatory requirements. On that basis, the Commission is of the view that Cameco has adequate measures in place at the CLO to ensure the protection of workers, members of the public and the environment over the proposed licence term.

4.5 Physical Design

63. The physical design SCA includes the activities to design the systems, structures and components (SSC) to meet and maintain the design basis of the facility. The design basis is the range of conditions, according to established criteria, that the facility must withstand without exceeding authorized limits for the planned operation of safety systems. Per the GNSCR and UMMR, Cameco’s application included information about the physical design of the CLO. Throughout the current licence term, CNSC staff rated Cameco’s performance in this SCA as “satisfactory.”

64. During the current licence term, CNSC staff conducted eight inspections that included compliance verification criteria related to the physical design SCA, including two focused inspections. CNSC staff reported that all non-compliances identified were of low safety significance and have been adequately addressed by Cameco.

65. Per its current licence condition 5.1, Cameco is required to implement and maintain a design program. Cameco submitted that facility change control and design control are utilized at the CLO to ensure that any physical changes to the facility are reviewed and approved by appropriate personnel before implementation. The site utilizes an electronic system to track changes and associated risks.

66. The principal facilities at the CLO are an underground mine and surface support facilities, including large capacity freeze plants, an ore slurry loadout facility, a minewater treatment plant, and lined waste rock pads.

67. CNSC staff submitted that Cameco has implemented and maintained a design control process at the CLO that verifies and validates the physical design of the facility as per CNSC's regulatory requirements. CNSC staff reported that Cameco followed its approved design and change management program in managing changes to the facility during the licence period.

68. The Commission sought further information concerning the measures in place to ensure the integrity of the ground support systems throughout the mine. Under the ground control program, prior to breaking ground, the rock mass is analyzed, and adjustments to the excavation plan are made based on that analysis. A comprehensive monitoring program, including routine visual inspections and remote monitoring via instrumentation, is in place following excavation.

69. The Commission asked Cameco about the safety impacts associated with the New Austrian Tunneling Method, which utilizes a sequential excavation method with the application of sprayed concrete. A Cameco representative stated that this method has largely mitigated concerns associated with ground deformation due to the application of ground freezing.

70. The Commission is satisfied that the information provided on the record for the hearing demonstrates the adequacy of the physical design of the CLO, and that Cameco continues to implement and maintain an effective design program at the CLO that meets regulatory requirements. The Commission is of the view that Cameo will continue to implement an appropriate design program for the proposed licence period.

4.6 Fitness for Service

71. The fitness for service SCA covers activities that are performed to ensure that structures, systems and components (SSCs) continue to effectively fulfill their intended purpose. Per the UMMR, Cameco's application included information regarding the policies, methods and programs for maintaining the CLO facilities. CNSC staff rated Cameco's performance in this SCA as "satisfactory" throughout the current licence period.

72. Per its current licence condition 6.1, Cameco is required to implement and maintain a maintenance program. Cameco submitted that the Cigar Lake *Maintenance Program* (CGR-MP) describes and manages the testing, inspection schedules and work procedures required to ensure that the physical condition of SSCs remain in good operating condition. The CGR-MP helps increase equipment availability through more efficient planning, predictive maintenance, training and documentation.

73. CNSC staff conducted nine inspections related to the fitness for service SCA during the current licence period. All compliance verification criteria assessed complied with the regulatory requirements identified in the *Licence Conditions Handbook.*

74. The Commission is satisfied that Cameco has effective programs for the inspection and life-cycle management of key safety systems at the CLO. The Commission concludes that the equipment as installed at the CLO is fit for service and that appropriate programs are in place to ensure that the equipment will remain fit for service throughout the proposed licence period.

4.7 Radiation Protection

75. The radiation protection SCA covers the implementation of a radiation protection (RP) program in accordance with the *Radiation Protection Regulations* (RPR). Per its current licence condition 7.1, Cameco must implement and maintain a radiation protection program, including the application of ALARA and worker and public dose control. Per the UMMR, Cameco is required to have an RP program and radiation code of practice (RCOP) in place at the CLO. Cameco submitted that the CLO RP program and associated RCOP are managed under the Cigar Lake *Radiation Protection Program* (CGR-RPP). CNSC staff rated Cameco's performance in this SCA as "satisfactory" throughout the current licence term.

76. CNSC staff conducted 18 inspections related to the radiation protection SCA during the current licence term, including three focused inspections in 2014, 2017, and 2019. All inspection findings were of low safety significance. CNSC staff submitted that Cameco has taken appropriate corrective actions and that all findings have been adequately addressed.

4.7.1 Application of ALARA

77. Cameco submitted that the CGR-RPP worked as intended throughout the current licence term to keep worker exposures as low as reasonably achievable (ALARA), social and economic factors taken into account. Maximum annual doses consistently remained well below regulatory limits[7]; no member of the workforce received an

[7] The effective dose limits for a nuclear energy worker (NEW) are set at 50 mSv in any one year and 100 mSv in a five-year dosimetry period. For pregnant NEWs the dose limit is 4 mSv from the time the pregnancy is declared to the end of the term. The dose limit for non-NEWs, including members of the public, is set at 1 mSv per year.

annual effective dose in excess of 10 millisieverts per year (mSv/y) at the CLO site during the current licence term.

78. CNSC staff reported that Cameco's application of ALARA within the CGR-RPP includes personnel training, management oversight, and establishment of annual ALARA targets focused on worker dose reduction. CNSC staff is satisfied with Cameco's measures in applying the ALARA principle to radiation exposures at the CLO.

79. CNSC staff reported that, based on its review of the CLO's compliance reports and CNSC staff's routine compliance verification activities, Cameco has implemented a radiation protection program that meets regulatory requirements. During the current licence period, no worker or member of the public received a radiation dose in excess of CNSC regulatory limits. CNSC staff reported that Cameco's efforts in applying the ALARA principle to keep the doses to persons ALARA over the current licence period are satisfactory.

80. On the basis of the information considered for this hearing, the Commission is satisfied that Cameco adequately applied the ALARA concept to all activities at the CLO.

4.7.2 Radiological Hazard and Worker Dose Control

81. Cameco submitted information about worker dose control measures in place at the CLO to protect against sources of radiological exposure coming from the mining of high-grade uranium ore. Engineered control measures such as shielding, physical barriers and ventilation are designed into the mining method and process circuits. Protective equipment and administrative controls such as staff training and work planning also control worker dose. Cameco noted that the possible spread of radioactive contamination is a potential concern at the CLO. As such, Cameco established a four-zone contamination control system to minimize the spread of contaminated material from a zone of high potential contamination to an area of low potential contamination.

82. Per the RPR, Cameco is required to control occupational exposures to radiation and to report on radiation doses received by workers. Cameco submitted that average and maximum effective doses over the current licence term remained well below the regulatory limits.

83. Cameco submitted that, in the current licence term, there were three RCOP action level exceedances at the CLO. Based on these events, Cameco implemented several corrective actions including procedural revisions, additional RP training and safety stand-downs. CNSC staff reported that details on these events were provided by CNSC staff in CMD 19-M36, *Regulatory Oversight Report on Uranium Mines and Mills in Canada: 2018*. CNSC staff conducted an inspection to confirm Cameco's follow-up to these events, verified the implementation of Cameco's corrective action plan and will continue to monitor the implementation and effectiveness of the corrective action plan.

84. Based on its inspections and review of Cameco's performance, CNSC staff reported that radiological hazards have been adequately controlled at the CLO.

85. The Commission examined the information provided on the record for this hearing and is satisfied that Cameco is adequately monitoring and controlling doses to workers at the CLO.

4.7.3 Control of Dose to the Public

86. Cameco reported that its 2017 human health risk assessment determined that the highest estimated annual dose to a public receptor from the CLO is 0.1 mSv/y. CNSC staff assessed the human health risk assessment and reported that public doses from the CLO are well below the annual regulatory public dose limit of 1 mSv/y.[8]

87. The Commission finds that Cameco has adequately controlled radiological doses to the public, and that radiological doses to the public from the CLO are well below the public dose limit.

4.7.4 Conclusion on Radiation Protection

88. The Commission concludes that Cameco's radiation protection program at the CLO meets the requirements of the RPR, and that Cameco has appropriate measures in place to control radiation hazards. On that basis, as it relates to radiation protection, the Commission is satisfied that Cameco will continue to provide for the adequate protection of the health and safety of persons and the environment throughout the proposed licence period.

4.8 Conventional Health and Safety

89. The conventional health and safety SCA covers the implementation of a program to manage conventional (non-radiological) workplace safety hazards and to protect personnel and equipment. Oversight of conventional health and safety practices at the CLO is provided at the federal and provincial levels by the CNSC and the Saskatchewan Ministry of Labour Relations and Workplace Safety, respectively. Per the UMMR, Cameco submitted in its application information about its proposed worker health and safety policies and programs. CNSC staff rated Cameco's performance in this SCA as "fully satisfactory" in 2013 and "satisfactory" throughout the remainder of the current licence term.

90. During the current licence term, both CNSC staff and Saskatchewan Ministry of Labour Relations and Workplace Safety carried out conventional health and safety inspections at the CLO. CNSC staff conducted 20 inspections related to the conventional health and safety SCA, including one focused inspection in April 2018.

[8] The natural background dose is estimated between 2 mSv – 5 mSv (2,000 µSv – 5,000 µSv) per year.

During the focused inspection, no corrective actions were identified. CNSC staff reported that Cameco has addressed all inspection findings identified during the current licence period. CNSC staff reported that Cameco's conventional health and safety program meets regulatory requirements.

91. Per its current licence condition 8.1, Cameco is required to implement and maintain an occupational health and safety program for the CLO. Cameco submitted that workplace safety hazards at the CLO are managed by the processes described within the Cigar Lake *Safety and Health Management Program* (CGR-SHMP). Risks to workers are minimized through site inspections, safety meetings, daily contact card review, job task observations and work permits. Engineered controls and safeguards are also in place including the mine design and water management infrastructure to prevent uncontrolled inflows.

92. Cameco has established an Occupational Health Committee (OHC) in accordance with the Saskatchewan *Occupational Health and Safety Act*. The OHC consists of employee and employer representatives and is responsible for reviewing past health and safety incidents, conducting safety inspections, evaluating safety programs, and recommending health and safety improvements. The Commission notes that the Canadian Institute of Mining, Metallurgy and Petroleum had awarded the CLO the John T. Ryan regional safety trophy for metal mines in 2018, 2019 and 2020.

93. In relation to the intervention from the Canadian Nuclear Worker's Council (CNWC) (CMD 21-H2.23), the CNWC representative encouraged Cameco to open a dialogue between the CLO OHC and the OHCs from other northern mine sites in order to share lessons learned. The Cameco representative stated that Cameco will look for opportunities for OHC collaboration across other northern mine sites.

94. In regard to lost time injuries (LTI), Cameco submitted that the most recent LTI at the CLO had occurred in 2016. In response to this LTI caused by wildlife onsite, Cameco developed explicit safety rules for wildlife management, updated training, implemented more effective wildlife deterrence measures at the CLO, and made revisions to the Cameco Wildlife Management Standard. Lost-time injuries are reported to the Commission as part of CNSC staff's uranium mines and mills annual regulatory oversight report.

95. On the topic of total recordable injuries at the CLO, a Cameco representative explained that the types of injuries contributing to this metric include back strains, twisted ankles and repetitive strain injuries. The Cameco representative stated that Cameco was undertaking an ergonomics initiative to address these types of injuries.

96. The Commission is satisfied that Cameco's conventional health and safety program at the CLO meets regulatory requirements. The Commission also finds that the health and safety of workers and the public were adequately protected during the current licence period. On that basis, the Commission finds it reasonable to conclude that the health

and safety of persons will continue to be adequately protected throughout the proposed licence period.

4.9 Environmental Protection

97. The environmental protection SCA covers the implementation of a program to identify, control and monitor all releases of nuclear and hazardous substances and effects on the environment. Per the UMMR and GNSCR, Cameco's application included information about its environmental protection program. CNSC staff rated Cameco's performance in this SCA as "satisfactory" throughout the current licence term.

98. Per its current licence condition 9.1, Cameco is required to implement and maintain an environmental protection program for the CLO that includes a set of action levels. Cameco is also required to inform the CNSC within 24 hours of any exceedance of an action level. Cameco submitted that the Cigar Lake *Environmental Management Program* (CGR-EMP) describes the programs for identifying, controlling and monitoring potential impacts to the environment. The program includes the Environmental Code of Practice (ECOP) that describes required actions to be taken in response to environmental concerns or monitoring results.

99. During the licence term, CNSC staff conducted ten inspections related to the environmental protection SCA, two of which were focused on the CLO environmental program. CNSC staff reported that all findings were minor in nature and had been adequately addressed.

100. CNSC staff reported that Cameco's environmental protection program meets the requirements of the following environmental protection regulatory documents and standards:

- CSA N288.4, *Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*
- CSA N288.5, *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*
- CSA N288.6, *Environmental Risk Assessment at Class 1 Nuclear Facilities, and Uranium Mines and Mills*
- CSA N288.7, *Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills*
- CSA N288.8, *Establishing and implementing action levels for releases to the environment from nuclear facilities*
- CNSC's REGDOC-2.9.1 (2017), *Environmental Protection: Environmental Principles, Assessments and Protection Measures, Version 1.1*

101. CNSC staff reported that a search within the *Species at Risk Public Registry* and a review of the *Aquatic Species at Risk Map* developed by Fisheries and Oceans Canada confirmed the absence of federally-listed aquatic species at risk in the area.

102. CNSC staff's CMD 21-H2 includes an *Environmental Protection Review Report* (appendix E), which supports CNSC staff's determination that:

- the potential risks from radiological and hazardous releases to the atmospheric, terrestrial, aquatic, geological, hydrogeological and human environments from Cameco's CLO are negligible; and
- Cameco has implemented and maintained effective environmental protection measures at the CLO to adequately protect the environment and the health of persons.

4.9.1 Effluent and Emissions Control (Releases)

103. Water discharged from the CLO to the environment must meet the effluent discharge limits stipulated in Cameco's licence and limits for selenium and uranium specified by the Province of Saskatchewan. Cameco is also required to demonstrate the principles of ALARA and Best Available Technology Economically Available (BATEA) at the CLO.

104. During the current licence term, Cameco reported 33 events to the CNSC that were classified under provincial regulatory requirements as reportable discharges or discoveries. A summary of reportable discharges at the CLO is provided to the Commission in the annual Regulatory Oversight Report for Uranium Mines and Mills. All reportable discharges are posted on the Cameco website.

105. In 2014, 10 reportable discharges and discoveries were attributed to releases of calcium chloride brine from the ground freeze system. Cameco implemented corrective actions to prevent potential future events. On the issue of whether the ground freezing system poses a risk of future brine spill to the environment, a Cameco representative stated that routine brine loss was not a concern. The representative explained that the ground freezing system holes were steel-cased and embedded in grout, and monitored to identify brine loss. CNSC staff noted that legislation enacted by the Province of Saskatchewan in 2015 had provided new criteria for classification of releases of calcium chloride brine, which also contributed to the reduction in reportable discharges.

106. Asked if mining activities could lead to surface water contamination, CNSC staff explained that there is low interaction between the ore body and groundwater due to the sediments surrounding the ore body. CNSC staff explained that any ground water inflow into the mine is pumped to the surface for treatment before being discharged to the environment. The Cameco representative stated that surface sediment data is

consistent with historical trends and there are no impacts to surface water related to the ore body itself or to the underground mining activities.

107. CNSC staff determined that Cameco's 2017 environmental risk assessment (ERA) for the CLO was conducted pursuant to CSA standard N288.6-12, *Environmental Risk Assessment at Class I Nuclear Facilities and Uranium Mines and Mills*. CNSC staff reviewed the 2019 addendum to Cameco's 2017 ERA, providing revised risk assessment predictions to reflect Cameco's optimization of water handling and treatment circuits to limit the release of arsenic in the effluent, and confirmed that the overall risks to the environment and human health from the CLO are negligible.

108. The representative for Environment and Climate Change Canada (ECCC) stated that Cameco is in compliance with all ECCC regulatory release limits, including selenium, arsenic, uranium and molybdenum.

109. In relation to the intervention from English River First Nation (CMD 21-H2.29) and the concerns regarding arsenic levels in the receiving environment at the CLO, the Commission asked CNSC staff to provide more information concerning arsenic levels in effluent from the CLO, and to explain the impact on the Seru Bay environment, as reported in the 2017 ERA. CNSC staff stated that the concentrations of arsenic in effluent from the CLO had never exceeded the limits stipulated in the Canada *Metal and Diamond Mining Effluent Regulations* (MDMER), and added that arsenic levels were not predicted to exceed those release limits at any time in the future. CNSC staff explained the difference between release limits, which apply at the point of release, and water quality objectives, which apply to concentrations in the receiving environment. The Commission is satisfied with the information provided by CNSC staff on this subject and that arsenic levels in effluent from the CLO do not pose a risk to the environment. The Commission notes that CNSC staff and Cameco need to work with the English River First Nation to communicate the reasons for the regulatory conclusions respecting how the environment is protected.

110. In June 2021, the MDMER will have additional provisions come into effect including more stringent licence limits for arsenic and lead, and new licence limits for un-ionized ammonia. CNSC staff noted that the CLO is already in compliance with the more stringent effluent limits.

111. The Commission was informed by CNSC staff that Cameco has made process changes in order to lessen the amount of arsenic in its effluent; these changes resulted in increased selenium and molybdenum releases due to an increase in the volume of water released. CNSC staff added that it was determined that there was a very low probability of impacts to birds and muskrats from the selenium and molybdenum releases.

112. Asked by the Commission about the distribution of arsenic throughout the CLO's ore body, a Cameco representative explained that, like all elements, arsenic concentrations were variable throughout the ore body. The Cameco representative added that Cameco has worked to understand the potential severity of arsenic concentrations to ensure that

the CLO's water treatment systems are sufficiently robust to protect the environment. The Cameco representative also added that Cameco routinely tests surface water samples to ensure that it meets regulatory requirements before being released.

113. Further on the same subject, a Cameco representative explained that, in Cameco's predictions for its 2019 ERA, the concentrations of selenium and molybdenum would remain constant in the effluent, but that a slight increase in the volume of water would be discharged. According to Cameco, the 2017 and 2019 ERAs confirm that the CLO remains within the objective of its licensing basis. Environmental monitoring demonstrates that concentrations of selenium and molybdenum in water and sediment of the receiving environment downstream of the CLO are below the applicable environmental quality guidelines despite the increased selenium and molybdenum releases.

4.9.2 Environmental Management System

114. CNSC staff reported that Cameco has implemented and maintained an environmental management system (EMS) to describe the activities associated with the protection of the environment at the CLO. The EMS is described in CGR-EMP and is in conformance with Cameco's Safety, Health, Environment and Quality Policy. It also meets the requirements of the ISO 14001:2015 standard *Environmental Management System – Requirements with Guidance for Use*. CNSC staff confirmed that Cameco's EMS is meeting expectations.

4.9.3 Environmental Monitoring

115. The Commission assessed the adequacy of Cameco's environmental monitoring program and whether emissions of nuclear and hazardous substances at the CLO are properly controlled. The role of the environmental monitoring is to acquire data on air, soil, surface water and aquatic biota, for assessing impacts on the environment from the operation and ensuring that possible impacts are detected as early as possible and mitigated.

116. Air quality monitoring at the CLO includes programs for ambient radon and total suspended particulates (TSP). There are eight radon monitoring stations in various locations around the site boundary. The average concentrations of radon in ambient air for 2013 to 2020 ranged from 6.7 Bq/m^3 to 23.2 Bq/m^3. CNSC staff reported that the radon concentrations were typical of regional baselines which range from 7.4 Bq/m^3 to 25 Bq/m^3. Environmental monitoring for TSP is conducted using a sampling unit located approximately 150 metres from the CLO in the prevailing downwind direction. Over the licence period, TSP values remained well below the provincial standard of 60 $\mu g/m^3$.

117. Cameco executes terrestrial monitoring programs every three years in accordance with the CGR-EMP. During the current licensing period, samples were collected in 2013, 2016 and 2019. Soil samples showed that the soil metal parameter concentrations were

below the *Canadian Environmental Quality Guidelines* for residential/parkland land use. Radionuclide concentrations in soils were low, near, or at background levels and detection limits.

118. CNSC staff assessed that the level of airborne particulate contaminants produced by the CLO is acceptable and does not pose a risk to soil or to lichen consumers such as caribou. Lichen sample test results indicated overall similarities in metal and radionuclide concentrations between exposure and reference stations[9]. Mean concentrations fell within the range of baseline concentrations for all contaminants except nickel. Nickel concentration measured at the reference station was higher than the historical mean in 2019, and higher than the exposure stations.

119. In accordance with the CGR-EMP, Cameco takes surface water samples at 11 locations around the CLO site. The results are compared against the *Saskatchewan Environmental Quality Guidelines* (SEQG[10]). CNSC staff reviewed the surface water quality results and reported that the majority of the results were below the SEQG. CNSC staff noted that concentrations of iron and aluminum are naturally higher than the SEQG at certain reference and exposure stations; concentrations of iron and aluminum at these stations are comparable to historical and seasonal values.

120. Cameco's aquatic environment monitoring programs are executed every three years in accordance with the CGR-EMP. During the current licensing period, aquatic monitoring data was collected in 2013, 2016 and 2019. CNSC staff reviewed monitoring reports to confirm whether the risks to aquatic ecological receptors accepted by the CNSC in previous environmental impact statements and ERAs remained valid. CNSC staff reported that the measured concentrations of constituents of potential concern from samples taken in 2019 remained below predictions contained within the 2017 ERA and its 2019 addendum.

121. The intervenor English River First Nation raised concerns about the presence of contaminants in muskrats and the potential human health effects associated with consumption. A Cameco representative stated that real-world samples of muskrat have shown that it was safe to eat muskrats living in the vicinity of the CLO.

122. The Commission is satisfied that effluent and environmental monitoring have demonstrated that releases from the CLO are below regulatory limits, and that concentrations of contaminants in the receiving environment are below guideline levels. Consequently, the Commission finds that while the CLO is not adversely affecting the environment, the Commission recognizes and acknowledges the concerns raised by the intervenor English River First Nation. The Commission instructs CNSC

[9] An exposure station is a sampling location that may be impacted by the operation. A reference station is a sampling location that is not impacted by the operation and thus, it is considered background.
[10] The province of Saskatchewan publishes the *Surface Water Quality Guidelines* for a variety of water uses. *Surface Water Quality Guidelines* are developed to provide basic scientific information about the effects of water quality variables on potential water use by aquatic life. Surface water quality concentrations below the SEQG mean that the surface water is safe for aquatic life.

staff to meet with the English River First Nation to listen to its concerns and respond to its questions in a meaningful way. Cameco would be well-placed and advised to participate as well, in these efforts to hear and address concerns.

Independent Environmental Monitoring Program (IEMP)

123. The CNSC has implemented its IEMP in order to verify that the public, Indigenous groups, and the environment around licensed nuclear facilities are safe. It is separate from, but complementary to, the CNSC's ongoing compliance verification program. The IEMP involves taking samples from public areas around the facilities, and measuring and analyzing the amount of radiological and hazardous substances in those samples. The samples are sent to the CNSC's independent laboratory for testing and analysis. CNSC staff's submissions included information regarding IEMP sampling campaign in 2020. The results from the 2020 IEMP campaign are available on the CNSC website.

124. CNSC staff reported that the levels of measured parameters were below available guidelines and CNSC screening levels in all 2020 IEMP samples, with the exception of selenium and polonium-210 in fish. The exceedances of the selenium screening levels occurred in samples collected at both the reference and exposure stations, and therefore, were not attributable to the CLO. Due to the conservative nature of CNSC's screening levels, CNSC staff reported that the consumption of surface water, fish, Labrador tea and blueberries is not expected to result in any adverse health effects from radiological or hazardous contaminants.

125. The Commission is satisfied with the IEMP campaigns in northern Saskatchewan related to this licence renewal. The Commission wishes to see CNSC staff increase its consideration of Indigenous knowledge in future IEMP campaigns to provide environmental data relevant to local Indigenous communities.

4.9.4 Protection of the Public

126. Cameco is required to demonstrate that the health and safety of the public and Indigenous groups are protected from exposures to hazardous and radioactive nuclear substances released from the CLO. The effluent and environmental monitoring programs currently conducted by Cameco at the CLO are used to confirm that releases of hazardous substances do not result in environmental concentrations that may affect public health.

127. The Commission is satisfied that radiation monitoring results verified that the dose to the public resulting from operations the CLO was below the annual dose limit of 1 mSv per year for any member of the public. The Commission is also satisfied that monitoring has shown that Cameco has controlled the releases of non-radiological contaminants throughout the current licence period, and that releases from the CLO did not adversely impact the quality of the local environment.

4.9.5 Conclusion on Environmental Protection

128. The Commission is satisfied that the information provided with respect to environmental protection was acceptable and thorough. The Commission notes that the NSCA provides a strong regulatory framework for environmental protection and the health and safety of persons.

129. The Commission is of the view that that Cameco has and will continue to have adequate programs in place for the control of effluent and emissions at the CLO to protect the environment and meet regulatory requirements. The Commission is satisfied that environmental monitoring completed by Cameco and by CNSC staff demonstrates that the public and the environment around the CLO site remain protected. The Commission is satisfied that the EMS in place at the CLO meets the requirements set out in REGDOC-2.9.1.

130. The Commission is satisfied that the ERA for the CLO was carried out in accordance with regulatory requirements. The Commission is of the view that the ERA demonstrates that Cameco is adequately protecting the environment in the vicinity of the CLO site, and that Cameco has adequate programs in place to mitigate risk to members of the public from operations at the CLO.

131. The Commission concludes that the measures implemented at the CLO are adequate for the purposes of environmental protection of aquatic species under the NSCA. The Commission is also satisfied that a search within the *Species at Risk Public Registry* and a review of the *Aquatic Species at Risk Map* developed by Fisheries and Oceans Canada confirmed the absence of federally-listed aquatic species at risk in the area.

132. Based on the above, the Commission finds it reasonable to conclude that the health and safety of persons and the environment will continue to be adequately protected throughout the proposed licence period.

4.10 Emergency Management and Fire Protection

133. The emergency management and fire protection SCA covers the emergency preparedness programs and plans in place to respond to emergencies and non-routine conditions. Per the UMMR and GNSCR, Cameco's application included information on its emergency management and fire protection programs. Throughout the current licence period, CNSC staff rated Cameco's performance in this SCA as "satisfactory."

134. Per its current licence conditions 10.1 and 10.2, Cameco is required to maintain and implement emergency management and fire protection programs. Cameco submitted that the emergency management and fire protection programs at the CLO are managed by the processes described within the Cigar Lake *Emergency Preparedness and Response Program* (CGR-EPRP) and *Fire Protection Program* (CGR-FPP).

135. CNSC staff conducted three inspections related to the emergency management and fire protection SCA during the current licence period, including a focused inspection in 2016. All inspection findings were of low safety significance and were satisfactorily addressed by Cameco.

4.10.1 Emergency Management

136. Cameco submitted that the CLO has approximately 60 emergency responders. In 2019, Cameco set the expectation that all emergency responders would work towards certification on both the emergency response team and the mine rescue team. New members are certified for underground mine rescue by the provincial Mine Rescue Coordinator. As required by the CNSC and also by Saskatchewan's *The Mines Regulations, 2018*, Cameco must train emergency response team members. Cameco utilizes classroom and field training as well as drills and exercises to ensure the preparedness of licenced personnel and emergency responders. Cameco submitted that emergency response plan training is also provided to all new employees.

137. CNSC staff reported that Cameco has an acceptable emergency preparedness and response program in place at the CLO that meets CNSC regulatory and performance requirements. The program identifies the onsite emergency response organization members and their responsibilities for responding to emergencies. The program also specifies the required equipment to be used in responding to emergencies, maintenance of equipment and detailed response procedures.

138. The Saskatchewan Health Authority (SHA) representative recognized Cameco's proactive response to the COVID-19 pandemic and the activation of Cameco's existing pandemic plan. The SHA representative noted that Cameco routinely communicated with the SHA to modify its pandemic response as needed.

139. The Commission is satisfied that Cameco has effective emergency management measures in place at the CLO. The Commission also acknowledges Cameco's response to the COVID-19 pandemic.

4.10.2 Fire Protection

140. Cameco reported that a third-party consultant completed fire hazard assessments (FHA) for the CLO in 2012 and 2020. The objective of a FHA is to demonstrate that the impact of potential fires at the CLO on people, equipment, buildings and the environment are within acceptable limits. The 2020 FHA update did not identify any significant fire protection issues at the CLO.

141. CNSC staff reported that the CGR-FPP meets regulatory requirements and complies with the requirements of the *National Fire Code of Canada, 2010* and the *National Building Code of Canada, 2010*.

142. On the topic of fire preparedness at the CLO, a Cameco representative stated that the CLO has firefighting equipment equivalent to that of a municipal fire department, and that emergency responders receive extensive and routine training on site. Facilities across the site are equipped with fire alarms and communication systems to enact the emergency response team. Cameco engages third party consultants to assess compliance with the *National Fire Code* and *National Building Code*.

143. Asked about potential radiation hazards associated with a fire on site, CNSC staff stated that all nuclear devices on site are fire-rated and that Cameco staff are trained on how to handle each device in case of a fire. CNSC staff noted that the facility is also designed to contain ore slurry in the case of a slurry tank failure.

144. The Commission is satisfied that Cameco has an adequate fire protection program in place at the CLO that meets regulatory requirements.

4.10.3 Conclusion on Emergency Management and Fire Protection

145. The Commission is satisfied that that Cameco's emergency preparedness and fire protection programs for the CLO meet regulatory requirements. The Commission is also satisfied that the emergency response and fire protection measures that are in place at the CLO will continue to be in place during the proposed licence period. On that basis, the Commission concludes that Cameco has adequate measures in place at the CLO to ensure the protection of workers, members of the public and the environment over the proposed licence term.

4.11 Waste Management

146. The waste management SCA covers internal waste-related programs that form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. Per the UMMR and GNSCR, Cameco's application included information related to its waste management program. CNSC staff assessed Cameco's performance in this SCA as "satisfactory" throughout the current licence term.

147. Per its current licence condition 11.1, Cameco is required to implement and maintain a waste management program at the CLO. Cameco submitted that waste management activities at the CLO are managed through the Cigar Lake *Waste Management Program* (CGR-WMP). Quantities of wastes produced, recycled, stored and disposed of, and the locations used for waste storage and disposal, are tracked as part of the CGR-WMP.

148. During the licence period CNSC staff conducted seven inspections related to the waste management SCA, including a focused inspection in 2018. The focused inspection did not identify any non-compliances related to the waste management program. CNSC staff reported that Cameco had adequately addressed all non-compliances and

recommendations identified during the licence period and that Cameco's CLO waste management program meets regulatory requirements.

149. During the current licence term, Cameco reduced the amount of non-contaminated solid waste disposed of at the domestic landfill. Recycling efforts, coupled with a reduction in construction waste, reduced annual non-contaminated solid waste disposed of at the landfill from 6,680 m^3 in 2013 to 3,210 m^3 in 2019.

150. In relation to Orano's intervention (CMD 21-H2.10), the Commission enquired about the responsibility for the tailings coming from the CLO. CNSC staff reported that the CLO's ore was processed into a slurry form before being transported to Orano's McClean Lake. CNSC staff added that once the ore slurry enters the McClean Lake system, Orano becomes responsible for maintaining and managing that material to the end of life, as specified in each licensee's *Licence Conditions Handbook*.

151. The Commission concludes that Cameco has implemented a program to safely manage waste at the CLO in accordance with regulatory requirements. On that basis, the Commission is of the view that Cameco will continue to meet regulatory requirements and expectations in the proposed licence period.

4.12 Security

152. The security SCA covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders or in expectations for the facility or activity. Per the GNSCR and UMMR, Cameco's application included information on its security program. Throughout the current licence term, CNSC staff rated Cameco's performance in this SCA as "satisfactory".

153. Per its current licence condition 12.1, Cameco is required to implement and maintain a security program. Cameco submitted that the Cigar Lake *Security Program* (CGR-SP) is in place to prevent the loss or theft of nuclear materials and substances and to prevent the interference of safe activities at the CLO. Cameco reported that there were no significant security related incidents at the CLO during the current licence term.

154. CNSC staff conducted two inspections related to the security SCA during the licence period. No non-compliances were identified related to this SCA. CNSC staff reported that Cameco has implemented a security program at CLO that meets regulatory requirements including the specifications of CNSC REGDOC-2.12.3, *Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material*, Version 2.1.

155. With respect to how site security is maintained at the CLO, a Cameco representative stated that security measures include routine threat and vulnerability assessments as well as site access control. The CLO site is only accessible by plane or by a single road. All individuals arriving by plane must be approved to board the flight. The road leading to the site has an access gate that is always staffed. CNSC staff confirmed that

Cameco's site security plan for the CLO is satisfactory, and noted that the CLO is considered a low-risk site.

156. The Commission is satisfied that that Cameco's security program for the CLO meets regulatory requirements, and finds that Cameco has made adequate provision for ensuring the physical security of the CLO. On that basis, the Commission concludes that Cameco has measures in place at the CLO to make adequate provision for security during the proposed licence period.

4.13 Safeguards and Non-Proliferation

157. Pursuant to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), Canada has entered into a Comprehensive Safeguards Agreement and an Additional Protocol (safeguards agreements) with the International Atomic Energy Agency (IAEA). The safeguards and non-proliferation SCA covers the programs and activities required for the implementation of the obligations arising from the Canada / IAEA safeguards agreements, as well as all other measures arising from the NPT and bilateral nuclear cooperation agreements. 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 are no undeclared nuclear material or activities in this country. The scope of the non-proliferation program for uranium mines is limited to the tracking and reporting of foreign obligations and origins of nuclear material.

158. Per its current licence condition 13.1, Cameco is required to implement and maintain a safeguards program. Cameco is required by the GNSCR to take all necessary measures to facilitate Canada's compliance with any applicable safeguards agreements. Per the GNSCR, Cameco's application included information on its safeguards program. Cameco submitted that it meets its safeguards obligations.

159. CNSC staff determined that Cameco's program for safeguards and non-proliferation at the CLO meets regulatory requirements, including the requirements of REGDOC-2.13.1, *Safeguards and Nuclear Material Accountancy*. CNSC staff reported that a request for complementary access to the CLO was received from the IAEA in May 2016, and that assistance was provided to the IAEA to access the CLO on May 18 and 19, 2016. No issues were identified by the IAEA during the visit. CNSC staff rated Cameco's performance in this SCA as "satisfactory" throughout the current licence period.

160. The Commission is satisfied that Cameco's program for safeguards and non-proliferation at the CLO meets regulatory requirements The Commission finds that Cameco has implemented necessary measures in the areas of safeguards and non-proliferation at the CLO. On that basis, the Commission finds it reasonable to conclude that Cameco will continue to make adequate provision for the maintenance of national security and measures required to implement international obligations to which Canada has agreed during the proposed licence period.

4.14 Packaging and Transport

161. The packaging and transport SCA covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility. The licensee must meet the requirements of the *Packaging and Transport of Nuclear Substances Regulations, 2015* (PTNSR 2015) and *Transport Canada's Transportation of Dangerous Goods Regulations* (TDG Regulations) for all shipments. Per the GNSCR and UMMR, Cameco's application included information on the proposed methods for transporting nuclear substances and hazardous substances. CNSC staff rated Cameco's performance in this SCA as "satisfactory" throughout the current licence period.

162. Per its current licence condition 14.1, Cameco is required to implement and maintain a packaging and transport program. Cameco submitted that the Cigar Lake *Transportation Program* (CGR-TP) describes the methods and practices utilized for transportation of bulk commodities, freight, ore slurry and waste materials to and from the CLO.

163. CNSC staff conducted six inspections related to the packaging and transport SCA during the current licence term, including a focused inspection in 2018. CNSC staff reported that Cameco satisfactorily addressed all inspection findings. CNSC staff assessed that Cameco has an effective program for the safe packaging and transport of radioactive materials at the CLO that meets regulatory requirements.

164. Cameco submitted that there were four reportable packaging and transport incidents at the CLO during the current licence term. Cameco stated that it investigated the incidents and implemented corrective actions to prevent reoccurrence. CNSC staff reported that none of the incidents resulted in health or radiological effects or releases to the environment. CNSC staff was satisfied with the corrective actions taken by Cameco.

165. Asked about the safety checks completed prior to transporting ore slurry to the McClean Lake Operation, a Cameco representative explained that the transportation containers undergo external visual and radiological assessments prior to leaving the CLO site.

166. The Commission concludes that Cameco has implemented a program to safely package and transport nuclear substances and hazardous substances in accordance with regulatory requirements. On that basis, the Commission is of the view that Cameco will continue to meet regulatory requirements and expectations in the proposed licence period.

4.15 CNSC Participant Funding Program

167. The Commission assessed the information CNSC staff provided regarding the CNSC's Participant Funding Program (PFP) as it related to this matter. CNSC staff submitted that, in October 2020, up to $100,000 in funding to participate in this licensing process was made available to Indigenous groups, members of the public and other stakeholders to review Cameco's licence renewal application and associated documents, and to provide the Commission with value-added information through topic-specific interventions.

168. A Funding Review Committee (FRC), independent of the CNSC, recommended that four applicants be provided with up to $109,094 in participant funding. These applicants were required, by virtue of being awarded participant funding, to submit a written intervention and make an oral presentation at the public hearing. Participant funding was awarded to the following recipients:

- Ya'thi Nene Land and Resource Office
- Canadian Nuclear Workers' Council
- Métis Nation-Saskatchewan
- English River First Nation

169. The Commission is satisfied that Indigenous groups, members of the public and other stakeholders were properly notified of Cameco's application and were provided with sufficient information on how to participate in the license renewal process. The Commission notes that PFP was made available to Indigenous communities and the public to support their participation.

4.16 Indigenous Consultation and Engagement

170. Indigenous consultation and engagement are not part of an SCA but remain an important component of the CNSC regulatory framework. These components of the regulatory framework address issues such as the CNSC's own efforts toward reconciliation and discharge of the common law duty to consult with Indigenous peoples pursuant to section 35 of the *Constitution Act, 1982*, as well as the licensee's Indigenous engagement activities.

4.16.1 Indigenous Consultation

171. The common law duty to consult with Indigenous peoples applies when the Crown contemplates action that may adversely affect established or potential Indigenous and/or treaty rights. The CNSC, as an agent of the Crown and as Canada's nuclear regulator, recognizes and understands the importance of building relationships and engaging with Canada's Indigenous peoples. The CNSC ensures that its licensing decisions under the NSCA uphold the honour of the Crown and considers Indigenous

peoples' potential or established Indigenous and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982*.

172. The duty to consult is engaged wherever the Crown has "knowledge, real or constructive, of the potential existence of an Aboriginal right or title and contemplates conduct that might adversely affect it".[11] Licensing decisions of the Commission, where Indigenous interests may be adversely impacted, can engage the duty to consult, and the Commission must be satisfied that the duty has been met prior to making the relevant licensing decision.

173. CNSC staff submitted that the duty to consult is not engaged by this decision because the proposed licence renewal would not cause any adverse impacts to any established or potential Indigenous and/or treaty rights. As Cameco is currently not proposing any changes to its CLO facility and operations, the Commission concludes that the renewal of existing authorized activities under this proposed licence does not give rise to novel adverse impacts that engage the consultation duty.

4.16.2 Indigenous Engagement

174. The Commission assessed the adequacy of Indigenous engagement activities with respect to the matter of this licence renewal application. The Commission considered information regarding activities carried out independently by both CNSC staff and Cameco.

Indigenous engagement by CNSC staff

175. CNSC staff submitted that it encouraged Indigenous communities' participation in this hearing process and provided information about the availability of participant funding to facilitate participation and details on how to participate. CNSC staff also submitted that it had sent letters of notification in October 2020 to the following identified First Nation and Métis groups who may have an interest in Cameco's licence renewal for the CLO:

- English River First Nation
- Hatchet Lake First Nation
- Black Lake First Nation
- Fond-du-Lac Denesuline First Nation
- Lac La Ronge Indian Band
- Métis Nation of Saskatchewan
- Ya'thi Néné Land and Resource Office
- Prince Albert Grand Council

[11] *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 at para 35

176. In their intervention (CMD 21-H2.31), the Métis Nation – Saskatchewan (MN-S) expressed concern with regard to CNSC staff's engagement efforts. The MN-S questioned whether CNSC staff had relied on Cameco to satisfy its Indigenous consultation obligations. CNSC staff clarified that no procedural aspects of consultation or engagement were formally delegated to Cameco. The Commission recognizes that CNSC staff and Cameco conducted independent engagement activities.

177. The Commission asked CNSC staff to explain how it determines the scope of and conducts its Indigenous engagement activities. CNSC staff responded it reviews each licence application to identify which Indigenous groups would be impacted by or have an interest in the request. CNSC staff then notify the identified groups of the proceedings and the opportunities to participate. CNSC staff hold follow-up meetings with interested groups, allow them to express their concerns and work to adequately address those concerns.

178. The Commission asked CNSC staff to elaborate on the actions it took to engage the MN-S. CNSC staff stated that it sent a letter to senior leadership of the MN-S to determine which locals should be included as part of the engagement process. CNSC staff held discussions with the MN-S to provide information about participant funding, and offered additional meetings to address specific concerns. CNSC staff noted that it did not receive notice of specific concerns until the MN-S submitted their intervention. CNSC staff emphasized its commitment to continuing to engage with the MN-S to address the concerns raised in their intervention.

179. The Ya'thi Néné Land and Resource Office (YNLR) filed an intervention (CMD 21-H2.32 and CMD 21-H2.32A) supportive of a 10-year licence renewal while expressing a recommendation for enhanced participation in monitoring and inspection initiatives for its community members. On its database of traditional land use and occupancy, the YNLR representative reported that the database was a snapshot in time from interviewed land users and not designed to track long-term monitoring results. The YNLR representative added that the database was maintained and used to support consultation or engagement efforts.

180. The YNLR representative alleged that CNSC staff's conclusion that the CLO had no impacts to Treaty rights was incorrect. The YNLR representative added that there were impacts on many types of land use such as collecting berries, fishing and impacts related to barren-ground caribou migration. The ECCC representative stated that the Canadian Wildlife Service published an updated recovery strategy for the Canadian woodland caribou population. The recovery strategy will positively impact the number of barren-ground caribou which are a subpopulation of woodland caribou.

181. Asked about community members' concerns related to drinking water quality, the YNLR representative stated that the major issue was the understanding and perception from community members as there was no tangible evidence of decreasing water quality. The YNLR representative added that community members would appreciate better communication and better participation in the water sampling.

182. On the same subject, the Commission asked whether CNSC staff had heard those concerns during its engagement with the communities. CNSC staff reported that concerns still exist in many parts of the communities and that CNSC staff had been looking for guidance from YNLR on how to better communicate information and build trust with the communities through regular workshops and outreach sessions. CNSC staff added that, for the IEMP, it engaged with the YNLR through the participant funding program to determine where the water samples would make sense for the communities and that it was planning to perform sampling into one of their communities to demonstrate how water sampling was performed.

183. On the transfer of Indigenous knowledge, CNSC staff reported that Indigenous knowledge was unique to each community and that CNSC staff needed to take it on a case-by-case basis relatively to how a specific community wants to share its knowledge. CNSC staff added that it developed an Indigenous knowledge policy framework based on the federal framework for working with Indigenous knowledge that will be posted in the near future.

Indigenous engagement by Cameco

184. Cameco submitted information with respect to its communication and Indigenous engagement activities with communities in northern Saskatchewan. These include formal agreements such as the Ya'Thi Néné Collaboration Agreement, and the associated Athabasca Joint Engagement and Environment Subcommittee and YNLR. Cameco also provided information with respect to its public information program.

185. REGDOC-3.2.2, *Indigenous Engagement*, Version 1.1 sets out requirements and guidance for licensees whose proposed projects may engage the Crown's duty to consult. CNSC staff submitted that Cameco's licence renewal application does not raise the formal requirements of REGDOC-3.2.2. CNSC staff recognized that Cameco has a well-established engagement and communications program with interested Indigenous groups, and has kept CNSC staff informed of its engagement activities.

186. Asked whether there was dialogue with local community members in advance of making uranium exploration cutlines, the Cameco representative indicated that Cameco was reaching out directly to land and resource users in the Cigar Lake area to discuss upcoming exploration and was also sending an engagement letter with project plans to stakeholders, cabin owners and land and resource users. R. Tsannie, the individual trapping closest to Cigar Lake, filed an intervention (CMD 21-H2.14) supportive of the CLO licence renewal.

187. In relation to the intervention from the Kineepik Métis Local (CMD 21-H2.19), the Kineepik Métis Local representative reported that community representatives are able to share information and raise concerns with Cameco directly through the Joint Implementation Engagement Subcommittee (JIES). The JIES is a forum developed as a

result of the collaboration agreement between the Northern Village of Pinehouse, Kineepik Métis Local, Cameco and Orano.

188. Asked about further engagement activities with the MN-S, a Cameco representative stated that Cameco plans to schedule a meeting with the MN-S to discuss the recommendations raised in their intervention. The MN-S representative requested Cameco's support to complete a Métis specific traditional land use study. The Commission encourages Cameco follow through with its commitment to meet with the MN-S.

189. Asked about the Community-Based Environmental Monitoring Program mentioned in his intervention, Mr. Robillard (CMD 21-H2.2) stated that Elders and land users came to the surveys to share information on hunting sites and fishing areas and provided samples from animals, fish, berries, birds or medicinal plants to be analysed. Mr. Robillard added that community members were generally satisfied with the information; however the translation of the technical terms of the findings and the reporting back to the community members could be improved.

190. Further on community concern regarding water quality around the CLO, the Cameco representative explained that the Eastern Athabasca Regional Monitoring Program and the Community-Based Environmental Management Program were regional monitoring programs that involve community participation and provided a venue for discussion around community impacts. The Cameco representative added that those programs collected samples of country foods and water in the vicinity of the seven Athabasca Basin communities with the direct involvement of community residents in the sample collection.

4.16.3 Conclusion on Indigenous Consultation and Engagement

191. Based on the information presented on the record for this hearing, the Commission is satisfied that this licence renewal would not cause adverse impacts to any potential or established Indigenous and/or treaty rights. The Commission concludes that the engagement and outreach activities taken for the review of the CLO licence renewal application have been adequate.[12]

192. The Commission acknowledges CNSC staff's efforts on behalf of the Commission, as well as Cameco's ongoing engagement and collaboration with interested Indigenous groups. The Commission is satisfied with the progress made by CNSC staff, as well as Cameco, in addressing the concerns raised by YNLR, and encourages greater communities' involvement.

193. The Commission would like to thank those who participated in this hearing and encourages CNSC staff and Cameco to continue ongoing engagement and outreach

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

activities with Indigenous communities and members of the public that have an interest in the CLO.

4.17 Public Information and Disclosure

194. The Commission assessed the adequacy of Cameco's public information and disclosure program (PIDP) for the CLO. Per the GNSCR and UMMR, Cameco's application included information on its public information program for the CLO.

195. Per its current licence condition G.4, Cameco is required to implement and maintain a public information and disclosure program for the CLO. Cameco's PIDP is also required to meet the specifications of *REGDOC-3.2.1, Public Information and Disclosure*. Cameco submitted that the Cigar Lake *Public Information Program* (CGR-PIP) is in place to inform the public on a timely basis of facility activities and its anticipated effects on the environment and public health. The Cameco public disclosure protocol is available on its website. CNSC staff submitted that Cameco's PIDP for the CLO meets regulatory requirements.

196. Cameco submitted that the primary audience for the CGR-PIP is the rights-bearing First Nation and Métis communities and municipalities of the Athabasca Basin that are located in the vicinity of the site. Specifically, these communities are:

- Black Lake Denesuline First Nation
- Fond du Lac Denesuline First Nation
- Hatchet Lake Denesuline First Nation
- Northern Settlement of Camsell Portage
- Northern Hamlet of Stony Rapids
- Northern Settlement of Uranium City
- Northern Settlement of Wollaston Lake

Cameco considers the general public of the Northern Administrative District and the province of Saskatchewan to be a secondary audience.

197. Cameco submitted that, in June 2016, Cameco and Orano signed a collaboration agreement with the primary audience communities known as the Ya'Thi Néné Collaboration Agreement (CA). Engagement between Cameco and the communities under the CA occurs primarily through the Athabasca Joint Engagement and Environment Subcommittee, a committee of community and industry representatives that meets regularly to discuss matters of importance to the communities.

198. Cameco reported that over 70 specific public engagement events were held during the current licence period to engage northern Saskatchewan communities in relation to the activities at the CLO. Engagement events include both virtual and in-person meetings in stakeholder communities, tours and technical workshops. Cameco also utilizes social media and polling to engage the public.

199. The Commission is satisfied that Cameco's CLO PIDP has and will continue to communicate to the public information about the health, safety and security of persons and the environment and other issues related to the CLO.

200. The Commission is satisfied that Cameco's PIDP meets regulatory requirements and is effective in keeping Indigenous groups and the public informed of the CLO operations. The Commission acknowledges the many best practices already implemented by Cameco, and encourages its efforts in creating, maintaining and improving its dialogue with local communities.

4.18 Decommissioning Plans and Financial Guarantee

201. The Commission requires that Cameco have operational plans for the decommissioning and long-term management of waste produced during the lifespan of the CLO. In order to ensure that adequate resources are available for the safe and secure future decommissioning of the CLO 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.

202. Cameco is obliged to meet the requirements set out in the GNSCR and UMMR and also meet the specifications of G-219, *Decommissioning Planning for Licensed Activities*, and CSA N294-09, *Decommissioning of facilities containing nuclear substances.* Current licence condition 11.2 requires Cameco to maintain a decommissioning plan.

203. Cameco submitted that the Cigar Lake *Preliminary Decommissioning Plan* (CGR-PDP) and *Preliminary Decommissioning Cost Estimate* (CGR-PDCE) describe the strategy by which the CLO would be decommissioned in the future and an estimate of the present value of the decommissioning cost. The CGR-PDP and CGR-PDCE are updated at five-year intervals or if required by a significant change.

204. Pursuant to subsection 24(5) of the NSCA, the Commission has imposed in the current licence a condition by which Cameco is required to provide a financial guarantee in a form that is acceptable to the Commission. The Government of Saskatchewan, under *The Mineral Industry Environmental Protection Regulations, 1996*, also requires that mining and milling projects be covered by financial guarantees. The CNSC guidance document G-206, *Financial Guarantees for the Decommissioning of Licensed Activities* provides regulatory guidance on financial guarantees and financial instruments, and sets out the relevant considerations for adequacy.

205. Asked about the state of Cameco's financial guarantee for the CLO, CNSC staff reported that Cameco had provided sufficient financial instruments to cover the revised financial guarantee as directed by the November 13, 2020 Commission decision. All CLO partners submitted letters of credit, apart from Orano, which submitted surety

bonds. Both types of financial instruments can be acceptable per G-206 and its successor document, REGDOC 3.3.1, *Financial guarantees for decommissioning of nuclear facilities and termination of licensed activities*. The Saskatchewan Ministry of Environment representative confirmed that Cameco is fully up to date with the submission of financial guarantee instruments.

206. The Commission is satisfied that Cameco has provided sufficient financial instruments to cover its financial guarantee for the CLO, as directed. The Commission concludes that the preliminary decommissioning plan and related financial guarantee for the CLO are acceptable for the purpose of this licence renewal.

4.19 Cost Recovery

207. The Commission examined Cameco's standing under the *Cost Recovery Fees Regulations* (CRFR) requirements for the CLO. Cameco submitted and CNSC staff confirmed that Cameco is in good standing with respect to the CRFR requirements for the CLO. The Commission is satisfied that Cameco has satisfied the requirements of the CRFR for the purpose of this licence renewal.

4.20 Nuclear Liability Insurance

208. The Commission notes that Cameco is not a designated facility under the *Nuclear Liability and Compensation Act* (NLCA). Natural ore is excluded from the definition of nuclear material under the NLCA. As a result, Cameco's CLO does not meet the criteria to be designated as a nuclear installation and is not under the purview of the NLCA.

4.21 COVID-19 Pandemic Response

209. In response to the COVID-19 pandemic, Cameco temporarily suspended production at the CLO from March 2020 to September 2020 and again from December 2020 until April 2021. On the topic of reliability of mine systems following the COVID-19 related shutdowns, the Cameco representative explained that only minor issues were experienced on restart in September 2020. The representative stated that each asset type has a defined asset management strategy and that a maintenance outage was executed prior to restart to ensure that equipment was fit for service.

210. With respect to regulatory oversight during the COVID-19 pandemic, CNSC staff explained that it conducted remote inspections to maintain regulatory oversight while following health guidelines. The Cameco representative expressed the view that the remote inspections were successfully carried out, although Cameco was required to prepare additional materials in advance. The Commission acknowledges Cameco's response to the COVID-19 pandemic, as well as CNSC staff's efforts to maintain regulatory oversight in the circumstances.

4.22 Licence Length and Conditions

211. With respect to the licence itself, the Commission was required to decide whether the proposed licence length is appropriate and whether the proposed licence conditions are appropriate.

4.22.1 Licence Length

212. The Commission considered Cameco's application for the renewal of the current CLO operating licence for a period of 10 years. CNSC staff recommended that the licence be renewed for a period of 10 years, until June 30, 2031. CNSC staff submitted that Cameco is qualified to carry on the licensed activities.

213. On the requested 10-year licence term, a Cameco representative explained that that a 10-year licence would provide an extended period of regulatory certainty for Cameco and the CLO joint venture partners. The Cameco representative added that, irrespective of the length of the licence term, Cameco is committed to continuously improve either to address new regulatory requirements or to address issues raised in discussions with local communities.

214. While supportive of the proposed licence renewal, the English River First Nation expressed the view that a 10 year-licence would not allow sufficient meaningful interaction with the Commission. The Commission appreciates the English River First Nation's perspective on this issue. The Commission is satisfied that the CNSC regularly reports on its ongoing compliance verification activities, and notes that a 10-year licence does not preclude any regulatory issues coming before the Commission before the expiry of the licence. The Commission is of the view that its public meetings on regulatory oversight reports provide opportunities for meaningful participation.

215. The Commission is satisfied that a 10-year licence is appropriate on the basis of Cameco's past performance and opportunities for public involvement during the renewed 10-year licence period through periodic RORs. The Commission will hold Commission meetings on the uranium mines and mills ROR in northern Saskatchewan throughout the licence period.

4.22.2 Licence Conditions

216. CNSC staff's CMD included a proposed draft licence. During the hearing, CNSC staff noted that there was an error in Part IV of the proposed draft licence which incorrectly included "the milling of uranium ore" as a licenced activity. The licensed activities at the CLO relate only to the mining of uranium ore.

217. CNSC staff recommended that the Commission delegate authority for licence condition 3.2, which contains the phrase "a person authorized by the Commission," to the following CNSC staff:

- Director, Uranium Mines and Mills Division
- Director General, Directorate of Nuclear Cycle and Facilities Regulation
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

218. The Commission removes "for the milling of uranium ore" from the authorized licensed activities. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority.

4.22.3 Conclusion on Licence Length and Conditions

219. The Commission concludes that a 10-year licence term is appropriate. The Commission includes in the licence the conditions as recommended by CNSC staff. The Commission also authorizes the delegation of authority as recommended by CNSC staff, and notes that it can bring any matter to the attention of the Commission as required.

5.0 CONCLUSION

220. The Commission has considered the licence renewal application submitted by Cameco. Based on its consideration of the information submitted, the Commission is satisfied that the application submitted by Cameco meets the requirements of the NSCA, the GNSCR and other applicable regulations made under the NSCA.

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

222. The Commission is satisfied that the duty to consult was not engaged, and finds that the indigenous engagement activities carried out by CNSC staff for this licence renewal were adequate.

223. The Commission is satisfied that Cameco meets the test for licensing set out in subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that Cameco is qualified to carry on the activity that the proposed licence will authorize and that it 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.

224. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the uranium mine licence issued to Cameco Corporation for the Cigar Lake Operation located in northern Saskatchewan. The renewed licence, UML-MINE-CIGAR.00/2031, is valid from July 1, 2021 until June 30, 2031.

225. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 21-H2, with the modification to remove "for the milling of uranium ore", as proposed by CNSC staff during the hearing. The Commission also delegates authority for the purposes of licence condition (LC) 3.2 as recommended by CNSC staff:

"*the licensee shall implement and maintain a program for reporting to the Commission or a person authorized by the Commission*".

226. The Commission is satisfied that a 10-year licence is appropriate.

227. With this decision, the Commission directs CNSC staff to report periodically on the performance of Cameco's CLO, as part of the *Regulatory Oversight Report for Uranium Mines and Mills in Canada*. CNSC staff shall present this report at a public proceeding of the Commission, where members of the public will be able to participate. The Commission will hold Commission meetings on the uranium mines and mills RORs in northern Saskatchewan throughout the licence period. The Commission notes that CNSC staff can bring any matter to the Commission that merits its attention. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the *Licence Conditions Handbook.*

Velshi, Rumina

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June 24, 2021

Rumina Velshi
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

Intervenors – Oral Presentations	Document Number
Ya'thi Néné Land and Resource Office, represented by G. Schmidt and M. Denechezhe	CMD 21-H2.32 CMD 21-H2.32A CMD 21-H2.32B
Saskatchewan Mining Association, represented by B. Sigurdson	CMD 21-H2.6 CMD 21-H2.6A
Rick Robillard, accompanied by V. Fern and D. Gazandlare	CMD 21-H2.2 CMD 21-H2.2A
English River First Nation, represented by Chief J. Bernard and C. Campbell	CMD 21-H2.29 CMD 21-H2.29A
Orano Canada Inc., represented by V. Laniece	CMD 21-H2.10 CMD 21-H2.10A
Taryn Roske	CMD 21-H2.13
Athabasca Basin Development, represented by G. Gay	CMD 21-H2.15
Métis Nation-Saskatchewan, represented by Elder Max Morin and M. Calette	CMD 21-H2.31 CMD 21-H2.31A
Canadian Nuclear Workers' Council, represented by B. Walker	CMD 21-H2.23 CMD 21-H2.23A
Canadian Nuclear Association, represented by J. Gorman	CMD 21-H2.27
Kineepik Métis Local, represented by M. Natomagan	CMD 21-H2.19 CMD 21-H2.19A
Intervenors –Written Submission	Document Number
Fond du Lac First Nations	CMD 21-H2.3
Mining Association of Canada	CMD 21-H2.4
Saskatoon Regional Economic Development Authority (SREDA)	CMD 21-H2.5
Northern Village of Ile a la Crosse	CMD 21-H2.7
Northern Settlement of Uranium City	CMD 21-H2.8
Kitsaki Management Limited Partnership	CMD 21-H2.9
Canada-India Business Council	CMD 21-H2.11
Lac La Ronge Indian Band	CMD 21-H2.12
Rose Tsannie	CMD 21-H2.14
Saskatchewan Chamber of Commerce	CMD 21-H2.16
Canada China Business Council	CMD 21-H2.17
Athabasca Joint Engagement and Environmental Subcommittee	CMD 21-H2.18
Northern Village of Beauval	CMD 21-H2.20
Ken Coates	CMD 21-H2.21
Greater Saskatoon Chamber of Commerce	CMD 21-H2.22
North Saskatoon Business Association	CMD 21-H2.24
PBN Construction	CMD 21-H2.25
United Steelworkers, District 3	CMD 21-H2.26
Northern Saskatchewan Environmental Quality Committee	CMD 21-H2.28
Des Nedhe Group	CMD 21-H2.30