



Record of Decision

DEC 21-H6

In the Matter of

Applicant Orano Canada Inc.

Subject Application to Amend Uranium Mine and Mill
Licence for The Expansion of the JEB Tailings
Management Facility

Public Hearing
Date October 4, 2021

Record of
Decision Date January 12, 2022

RECORD OF DECISION – DEC 21-H6

Applicant: Orano Canada Inc.

Address/Location: 100 - 833 45th Street West
Saskatoon, SK, S7L 5X2

Purpose: Application to Amend Uranium Mine and Mill Licence for The
Expansion of the JEB Tailings Management Facility

Application received: [June 16, 2020](#)

Notice of public hearing: [February 1, 2021](#); revised [February 26, 2021](#) & [July 26, 2021](#)

Date of public hearing: [October 4, 2021](#)

Location: [Virtual Hearing](#)

Members present: R. Velshi, President
R. Kahgee
S. McKinnon

Secretary: M. Leblanc
Recording Secretary: D. MacDonald
Senior General Counsel: L. Thiele
Legal Counsel: J. Saric

| Applicant Represented By | | Document Number |
|---------------------------------|--|-----------------------------|
| J. Corman | President and Chief Executive Officer | CMD 21-H6.1 CMD 21-H6.1A |
| V. Laniece | Vice President, Safety, Environment & Engineering | |
| T. Searcy | Manager, Regulatory and Environmental Science | |
| G. Lafleur | Manager, Northern Affairs | |
| CNSC staff | | Document Number |
| K. Murthy | Director General, Directorate of Nuclear Cycle and Facilities Regulation (DNCFR) | CMD 21-H6 CMD 21-H6.A |
| P. Fundarek | Director, Uranium Mines and Mills Division, DNCFR | |
| S. Akhter | Senior Project Officer, Uranium Mines and Mills Division, DNCFR | |

| | | |
|--|---|--|
| E. Dagher | Environmental Risk Assessment Specialist, Environmental Risk Assessment Division, (DERPA) | |
| A. Levine | Team Leader, Indigenous Consultation and Participant Funding, Indigenous and Stakeholder Relations Division, Strategic Planning Directorate | |
| K. Sauvé | Director, Health Sciences and Environmental Compliance Division, DERPA | |
| P. Burton | Director, Uranium Mines and Mills Division, DNCFR | |
| J. Truong | Project Officer, Wastes and Decommissioning Division, DNCFR | |
| Intervenors | | |
| See appendix A | | |
| Other Government Representatives | | |
| <ul style="list-style-type: none"> • Saskatchewan Ministry of Labour Relations and Workplace Safety: L. Kaskiw • Saskatchewan Ministry of Environment: T. Moulding • Ministry of Government Relations: S. Boyes • Saskatchewan Health Authority: J. Irvine | | |

Licence: Amended

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1.0 INTRODUCTION

1. Orano Canada Inc. (Orano), formerly AREVA Resources Canada Inc. (AREVA), has applied to the Canadian Nuclear Safety Commission¹ to amend the existing uranium mine and mill licence for its [McClean Lake Operation](#) (MLO), located in Northern Saskatchewan. The requested amendment is to allow for the expansion of the JEB² Tailings Management Facility (TMF). The Commission renewed the operating licence for the MLO in [July 2017](#) for a 10-year term, with an expiry date of June 30, 2027. In [July 2018](#), the Commission issued the current licence, UMOL-MINEMILL-McCLEAN.01/2027, to reflect the licensee's name change from AREVA to Orano.
2. The MLO is roughly 750 km north of Saskatoon, Saskatchewan and began operation in 1999 with the mining and milling of uranium ore from five open-pit mines. Conventional mining has not been carried out at the MLO since 2008, but since 2014, the MLO has processed high-grade uranium ore from Cameco Corporation's (Cameco) [Cigar Lake mine](#). The JEB TMF is the repository for tailings resulting from uranium processing at the MLO and is planned to reach the currently approved capacity in approximately 2027.

Issues

3. In considering Orano's application for the amendment of the existing uranium mine and mill licence, the Commission considered whether and what requirements the [Impact Assessment Act](#)³ (IAA) imposes in relation to the activities sought to be authorized.
4. Under paragraphs 24(4)(a) and (b) of the [Nuclear Safety and Control Act](#)⁴ (NSCA), the Commission is required to decide:
 - a) whether Orano is qualified to carry on the activities that the amended licence would authorize; and
 - b) whether in carrying on these activities, Orano 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.
5. As an agent of the Crown, the Commission recognizes its role in fulfilling the Crown's constitutional obligations, along with advancing reconciliation with Canada's Indigenous Nations and communities. The Commission's responsibilities include the duty to consult and, where appropriate, accommodate Indigenous interests where the Crown contemplates conduct which may adversely impact potential or

¹ The *Canadian Nuclear Safety Commission* is referred to as the "CNSC" when referring to the organization and its staff in general, and as the "Commission" when referring to the tribunal component.

² JEB represents the initials of John Everett Bates, who discovered the uranium deposit.

³ Statutes of Canada (S.C.) 2019, chapter (c.) 28, s. 1.

⁴ S.C. 1997, c. 9.

established Indigenous or treaty rights.⁵ As such, the Commission must confirm whether the duty to consult is engaged by this licence amendment application and what engagement and consultation steps and accommodation measures are called for, respecting Indigenous interests.

Public Hearing

6. On February 1, 2021, the Commission published a [Notice of Public Hearing and Participant Funding](#) for this matter, which invited requests to intervene by August 9, 2021. The Commission subsequently published two revised notices. The first, on [February 26, 2021](#), extended the deadline for interventions by one week and similarly delayed the scheduled hearing date. The second, on [July 26, 2021](#), further delayed the hearing date to respect The National Day for Truth and Reconciliation.
7. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission over which she would preside, including Commission members Dr. Stephen McKinnon⁶ and Mr. Randall Kahgee, to decide on the application. The public hearing was conducted on [October 4, 2021](#) in accordance with the [Canadian Nuclear Safety Commission Rules of Procedure](#). The Commission considered written submissions and heard oral presentations from Orano ([CMD 21-H6.1](#), [CMD 21-H6.1A](#), and [CMD 21-H6.1B](#)), CNSC staff ([CMD 21-H6](#) and [CMD 21-H6.A](#)), and 6 intervenors⁷. The hearing was [webcast](#) live, and an [archive](#) made available, via the CNSC's website.

CNSC Participant Funding Program

8. Pursuant to paragraph 21(1)(b.1) of the NSCA, the Commission has established a [Participant Funding Program](#) (PFP) to facilitate the participation of Indigenous Nations and communities, members of the public and stakeholders in Commission proceedings. In [February 2021](#), up to \$100,000 in funding to participate in this licence amendment process was made available through the CNSC's PFP to review Orano's licence application and associated documents, and to provide the Commission with value-added information through topic-specific interventions. A Funding Review Committee (FRC), independent of the CNSC, reviewed the funding applications received and made recommendations on the allocation of funds. Based on the recommendations from the FRC, the CNSC awarded a total of up to [\\$105,680 to three applicants](#):

⁵ *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

⁶ Dr. Stephen McKinnon resigned as a member of the Commission effective December 1, 2021. Pursuant to subsection 23(2) of the NSCA, he has taken part in the disposition of this matter.

⁷ See Appendix A for a list of interventions.

- Ya'thi Néné Land and Resource Office⁸ – up to \$50,000
- English River First Nation (ERFN) – up to \$25,680
- Métis Nation-Saskatchewan (MN-S) – up to \$30,000

2.0 DECISION

9. Based on its consideration of this matter, as described in more detail in the following sections of this *Record of Decision*, the Commission concludes the following:
- The Commission is satisfied that an impact assessment under the *Impact Assessment Act* (IAA) is not required;
 - The Commission is satisfied that CNSC staff's engagement efforts with Indigenous Nations and communities has satisfied the Commission's obligations with respect to the duty to consult;
 - Orano is qualified to carry on the activities that the licence amendment will authorize; and
 - Orano, in carrying on these activities, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the uranium mine and mill licence issued to Orano Canada Inc. for its McClean Lake Operation located in northern Saskatchewan. The amended licence, UML-MINEMILL-McCLEAN.02/2027, remains valid until June 30, 2027.

10. This amended licence authorizes Orano to modify the outer perimeter of the JEB TMF for expansion up to 468 metres above sea level (mASL) and to accommodate disposal of tailings up to a consolidated tailings elevation of 462 mASL. The amended licence includes this expanded licenced activity and all previous licenced activities authorized under Orano's current licence, as well as all existing licence conditions.

⁸ After being awarded funding, the Ya'thi Néné Land and Resource Office indicated it would no longer be participating at the Commission hearing.

3.0 APPLICATION OF THE *IMPACT ASSESSMENT ACT*

11. In coming to its decision, the Commission considered whether an impact assessment under the IAA was required. The IAA came into force on August 28, 2019. Pursuant to the IAA and the *Physical Activities Regulations*⁹ 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. Orano's application pertains solely to the expansion of the existing JEB TMF. Expansion of the existing JEB TMF is not a project designated¹⁰ in the *Physical Activities Regulations* under the IAA.
12. The Commission concludes 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.¹¹ The Commission notes that the NSCA provides a strong regulatory framework for environmental protection and the health and safety of persons.

4.0 ISSUES AND COMMISSION FINDINGS

13. In making its licensing decision, the Commission considered a number of issues and submissions relating to Orano's qualification to carry out the proposed 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.
14. The matter before the Commission is an application to amend an existing uranium mine and mill licence. The proposed amended licence contains an additional licensed activity related to the expansion of the JEB TMF. The Commission will focus its reasons on the issues that it considers the most relevant to the requested amendment, specifically:
 - Applicable safety and control areas
 - Indigenous consultation and engagement
 - Other matters of regulatory interest
 - Reflection of the proposed expanded licenced activity in the licence

⁹ SOR/2019-285.

¹⁰ Section 23 of the *Physical Activities Regulations* designates expansion of a uranium mill if the expansion would result in an increase in the area of mining operations of 50% or more.

¹¹ 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 amendment does not engage any such applicable IAA requirements.

15. The Commission also examined the completeness of Orano's [application](#) and the adequacy of the information submitted, as required by the NSCA, the [General Nuclear Safety and Control Regulations](#)¹² (GNSCR), the [Uranium Mines and Mills Regulations](#)¹³ (UMMR), and other applicable regulations made under the NSCA. The GNSCR call on a licence amendment applicant to provide information regarding any changes in information to the CNSC as part of its application. Section 6 of the GNSCR provides:

An application for the amendment, revocation or replacement of a licence shall contain the following information:

- (a) a description of the amendment, revocation or replacement and of the measures that will be taken and the methods and procedures that will be used to implement it;
- (b) a statement identifying the changes in the information contained in the most recent application for the licence;
- (c) a description of the nuclear substances, land, areas, buildings, structures, components, equipment and systems that will be affected by the amendment, revocation or replacement and of the manner in which they will be affected; and
- (d) the proposed starting date and the expected completion date of any modification encompassed by the application.

16. Several interventions addressed the potential economic impact of the MLO, such as local job creation and the importance of the MLO's milling activities to other organizations. 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. It is the health, safety and security of the public, the protection of the environment, national security, and the implementation of the international obligations to which Canada has agreed that guide its decisions, in accordance with the NSCA.

4.1 Safety and Control Areas

17. The Commission examined CNSC staff's assessment of Orano's performance at the MLO under its current licence in all 14 [Safety and Control Areas](#) (SCAs)¹⁴:
- Operating Performance
 - Safety Analysis
 - Physical Design
 - Environmental Protection
 - Waste Management

¹² SOR/2000-202.

¹³ SOR/2000-206.

¹⁴ SCAs are the technical topics used by CNSC staff across all regulated facilities and activities to assess, evaluate, review, verify and report on regulatory requirements and performance.

- Management System
- Human Performance Management
- Fitness for Service
- Radiation Protection
- Conventional Health and Safety
- Emergency Management and Fire Protection
- Security
- Safeguards and Non-Proliferation
- Packaging and Transport

18. As Orano's application is for an amendment to allow for the expansion of the JEB TMF and not a licence renewal, the Commission notes that five SCAs are of particular relevance in this matter, namely, Operating Performance, Safety Analysis, Physical Design, Environmental Protection and Waste Management. CNSC staff reported that its assessment focused on these five SCAs. CNSC staff have performed compliance verification activities, including inspections, throughout the current licence period and have rated Orano's performance in all applicable SCAs as satisfactory.

4.1.1 Operating Performance

19. The Commission examined Orano's operating performance at the MLO in general, and with respect to the JEB TMF specifically, which covers the conduct of licensed activities and the activities that enable effective performance. CNSC staff submitted an assessment of this SCA focused on the JEB TMF and found that Orano has operated the JEB TMF in compliance with regulatory requirements.
20. In its submission, Orano detailed the processes related to the operation and proposed expansion of the JEB TMF. Various waste streams from the uranium mill are treated to neutralize the acidity, precipitate contaminants out, and thicken the tailings for disposal. These processed tailings are then stored in the JEB TMF in-pit disposal facility, which at its current perimeter height is estimated to reach capacity in 2027.
21. Orano submitted that tailings are managed so that constituents of potential concern (COPCs) are controlled to protect the environment. The JEB TMF has been specifically designed to manage the tailings properties during operations and over the long term. Orano explained that it manages water in and around the JEB TMF during the operational period. This includes isolating the JEB TMF by way of pumping to ensure COPCs cannot flow into the environment and the water cover (i.e., TMF pond), which acts as a radiation shield and prevents the tailings from freezing. Monitoring of the primary COPCs¹⁵ is further discussed in section 4.1.4.

¹⁵The primary COPCs in the JEB TMF are arsenic, molybdenum, uranium and radium-226.

22. Asked about the effect of the proposed JEB TMF expansion on the operations of the JEB water treatment plant, an Orano representative stated that Orano does not anticipate an increase in the volume of water treatment following the JEB TMF expansion. The representative explained that the water sources are the relatively clean water from the bottom of the TMF, also used as process water, and contaminated water pumped directly from the TMF pond. The water treatment plant is currently operated at about 80% of its capacity using a three-stage chemical process and feedwater is monitored to maintain steady-state. The representative added that the TMF pond is kept at a low enough water level to always be able to absorb a maximum precipitation event.
23. With respect to operations during upset conditions, an Orano representative stated that the water treatment plant is operated with backups and redundancies. The representative explained that power outages are common in northern Saskatchewan and that the MLO has full backup power, which can be enabled in about a minute. Mobile backup generators are also available at the MLO as required. The representative further explained that there are multiple sets of the required pumps to ensure that there is enough capacity should one fail. Additionally, the representative noted that Orano performs regular preventative maintenance on the pumps and stores spare parts on-site in the event repairs are needed.
24. In their interventions, Denison Mines Corporation ([CMD 21-H6.4](#)) and Cameco ([CMD 21-H6.6](#)) expressed that Orano was a competent operator. Cameco highlighted its cooperation with Orano with respect to the MLO and Orano's experience constructing, operating, and decommissioning the Cluff Lake uranium mine and mill, included a tailings management area. Denison Mines Corporation highlighted its close experience working with Orano and noted Orano's established operating measures.
25. CNSC staff informed the Commission that Orano reports on the operational performance of the JEB TMF every five years through the Tailings Optimization and Validation Program¹⁶ (TOVP). The 2020 report included performance of Cigar Lake tailings placed in the JEB TMF and CNSC staff noted that JEB TMF was performing as expected. Through ongoing regulatory oversight, CNSC staff found that Orano takes timely and appropriate corrective actions to resolve non-compliances and that improvements to the operation, facility, and processes are identified on an ongoing basis and implemented as part of continuous improvement.
26. The Commission concludes that Orano is qualified to carry out the proposed expansion of the JEB TMF safely. Based on its assessment of Orano's performance in this SCA, for the MLO in general and JEB TMF specifically, the Commission is satisfied that Orano continues to meet regulatory requirements with respect to operating performance, and that CNSC staff have the appropriate regulatory tools in place to ensure Orano's continued compliance during the expansion of the JEB TMF and the continued safe operation of the MLO

¹⁶ In 2015 the TOVP was integrated into the Tailings Management Technical Information Document (TMTID).

4.1.2 Safety Analysis

27. The Commission examined Orano's safety analysis, which is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventive measures and strategies in reducing the effects of such hazards. CNSC staff submitted an assessment of this SCA with respect to the proposed JEB TMF expansion and Orano's measures to protect workers and the environment at the MLO. CNSC staff indicated that Orano's safety analysis meets regulatory requirements.
28. In its submission, Orano detailed the findings of its risk analysis of the expanded JEB TMF including water quality, the engineered embankment, and stability in the operating and post-closure periods. Orano submitted that the long-term water quality in neighboring water bodies is expected to meet guidelines and objectives for all COPCs. Orano found that the embankment design incorporated a sufficient safety factor to be stable at the end of the operating period. Finally, Orano found that the post-closure landform will be stable, safe and environmentally sustaining without active maintenance.
29. Orano provided information on its study of the proposed embankment for the JEB TMF expansion and its review of relevant case studies in tailings dam failures to demonstrate the safety of the JEB TMF embankment. Orano assessed its slope stability analysis against the US Army Corps of Engineers recommendations and those of the Canadian Dam Association (CDA), and found it meets these safety factor requirements. Orano reviewed the 2014 Mount Polley tailings storage facility breach, which was the result of a foundation failure, and noted that additional drilling investigation was performed in 2021. The purpose of this investigation was to provide further confidence in the proposed embankment for the JEB TMF expansion.
30. The Commission asked Orano about the anticipated timeframe for its gap analysis against the recently published Global Industry Standard on Tailings Management by the International Council on Mining & Metals (ICMM). An Orano representative stated that Orano expects to be fully in compliance with the standard by 2023. The representative added that Orano has not noted any differences between the ICMM standard and those already applicable in the licencing basis, but that such international standards are important to its business. CNSC staff explained that such standards may be incorporated in the licencing basis, and that CNSC staff would assess whether they are applicable to the CNSC's regulatory expectations.
31. CNSC staff explained that the primary hazards of the JEB TMF expansion include the increased embankment height up to 10.5 m, extra loading resulting from the expanded embankment, and an increase in the consolidated tailings elevation up to 14 m above the low side ground elevation. With respect to the safety analysis, CNSC staff reported that Orano responded to CNSC staff requests for further assessments in a timely and satisfactory manner. CNSC staff informed the Commission that Orano is required to perform density measurements during footprint preparation and provide these results to the CNSC for review prior to beginning embankment construction.

32. CNSC staff assessed Orano's analysis of a hypothetical worst-case accident involving a very low probability failure during the operation of the expanded JEB TMF embankment, and confirmed that the water bodies downstream of Pat Lake would likely remain protected. With respect to mitigation, CNSC staff reported that Orano will implement a JEB TMF embankment structure monitoring program and report on its results to the CNSC annually. CNSC staff noted that the long-term stability of the embankment will be improved by the flattening of the slope and removal of the TMF pond during decommissioning.
33. The Commission concludes that Orano has adequate preventative measures and strategies in place at the MLO to ensure the protection of workers, members of the public and the environment during the proposed JEB TMF expansion. Having evaluated information pertaining to the safety analysis of the proposed JEB TMF expansion, the Commission is satisfied that Orano has systematically evaluated potential hazards and adequately prepared for reducing the effects of such hazards for the proposed expansion of the JEB TMF. The Commission is satisfied that Orano's safety analysis program for the MLO meets regulatory requirements and that CNSC staff will review and accept appropriate documents and work plans prior to any construction activities.

4.1.3 Physical Design

34. The Commission examined Orano's physical design for the JEB TMF and the proposed expansion, which relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis given new information or activities arising over time and taking changes in the external environment into account. CNSC staff submitted an assessment of this SCA and informed the Commission that Orano continues to implement and maintain effective design programs at the MLO in accordance with regulatory requirements.
35. Orano submitted details of its physical design program at the MLO and its site characterization for the JEB TMF. The physical design program includes change and design control, which ensures that changes can be implemented safely and appropriate consideration has been given to each stage in a design. Orano reported that extensive characterization began at the JEB site in 1995 and that in 2021 drilling investigations at nine locations around the JEB TMF showed the absence of any weak clay layers.
36. Orano also provided the Commission with details on the JEB TMF embankment design and post-operational landform and cover design. The expanded embankment design is based on previous investigation results and will require field verification prior to the construction of each component. Orano reported that expansion also involves construction of a soil-bentonite liner to provide containment to the JEB TMF pond water. Orano further reported that the final post-closure landform design is based on redundant, passive drainage. Orano prepared a conceptual post-closure soil cover design for the JEB TMF with the goal of minimizing infiltration of groundwater and providing a barrier to the tailings.

37. Orano explained that the proposed JEB TMF expansion will result in an embankment elevation of 468 mASL for accommodating a consolidated tailings elevation of 462 mASL. CNSC staff found that this proposed expansion to 468 mASL required a licence amendment as it is outside of the current licencing basis. Orano is currently expanding the JEB TMF to 457.5 mASL in accordance with the current licencing basis. Orano reported that construction of this embankment was completed in 2021, with placement of the liner expected in 2023, and that the top of the placed tailings is currently at 452 mASL.
38. In its submission, the Métis Nation-Saskatchewan (MN-S) ([CMD 21-H6.3](#)) expressed the importance of maintaining the dewatering system. When asked by the Commission about water management, an Orano representative explained that pumping is balanced between the top and bottom of the TMF¹⁷. The representative stated that Orano manages the TMF pond to ensure that there is a sufficient amount of water to act as a radiation shield, and to prevent the tailings from freezing. The representative noted that Orano takes care during high instantaneous pumping to ensure that contaminants are not present. With respect to the proposed 10 m distance from Fox Lake to the toe of the expanded TMF dam, a representative from the Saskatchewan Ministry of Environment (SMOE) stated that construction information it has assessed to date suggests that the containment should be stable and that Orano will continue long-term modelling of water level and quality.
39. Asked about the timing of possible future expansion at the MLO, an Orano representative explained that it takes 5 to 10 years to make such decisions. The representative noted that the timing of the proposed JEB TMF expansion allows for the planning of such long-term projects. The representative stated that Orano intends to maintain a consistent supply of uranium to the mill, and that possible sources include future development in the Athabasca Basin.
40. CNSC staff submitted its assessment of the site characterization, structure design, and component design of the JEB TMF. CNSC staff confirmed that Orano's laboratory testing program found that the site meets geotechnical requirements. CNSC staff determined that Orano's proposed embankment design meets the CDA criteria for slope stability. CNSC staff found that the results of laboratory and in situ testing validated the liner design, which is the same design currently in use for the expansion up to 457.5 mASL.
41. CNSC staff reported the preliminary designs for the post-closure landform and TMF cover meet regulatory requirements. CNSC staff noted that Orano has committed to use the maximum probable flood event in its detailed design, and to further assess erosion on embankment slopes. With respect to the TMF cover, CNSC staff explained that the design requirements will be refined and incorporate the results of the field cover test plot program. Orano has also committed to developing a detailed soil cover monitoring program to monitor and verify performance following decommissioning. CNSC staff noted that the future decommissioning of the JEB TMF will require a separate licencing decision where these finalized designs will be presented.

¹⁷ The JEB TMF water sources are *reclaimed water*, from the TMF pond, and *raise water*, from the bottom drain.

42. Having evaluated information provided by CNSC staff and Orano related to the proposed JEB TMF expansion and the site characterization, the Commission concludes that the designs are adequate for expansion to an embankment elevation of 468 mASL. Based on Orano's performance during its current licence period, the Commission is satisfied that the design program in place at the MLO continues to meet regulatory requirements. The Commission is also satisfied that the embankment and liner designs have been adequately assessed against the appropriate standards and are supported with analysis results. The Commission expects that Orano will consider up-to-date climate science in its detailed designs of post-closure structures to ensure their long-term integrity.

4.1.4 Environmental Protection

43. The Commission examined Orano's performance with respect to its environmental protection programs at the MLO in general, and the JEB TMF specifically. The environmental protection SCA covers programs that identify, control and monitor all releases of nuclear and hazardous substances, as well as effects on the environment from facilities or as the result of licensed activities. CNSC staff submitted an assessment of this SCA and a detailed Environmental Protection Review (EPR) of the proposed JEB TMF expansion project (CMD 21-H6, Appendix E). CNSC staff found that Orano continues to implement and maintain an environmental protection program that adequately protects the environment and the people.
44. Orano provided the Commission with detailed information on its environmental management system (EMS). The EMS is designed to meet the requirements of the CNSC, the SMOE, Environment and Climate Change Canada, and the International Organization for Standardization (ISO) 14001:2015¹⁸ standard. Orano noted the importance of continual improvement in its EMP. With respect to the proposed JEB TMF expansion project, Orano identified mitigations for interactions between the project and potential risks to the environment, such as erosion of the post-closure soil cover due to an accident. Orano reported that these potential interactions are within those already predicted and assessed for the MLO, and are not expected to result in an unreasonable risk to the environment.
45. CNSC staff found that Orano has an effective environmental protection program at the MLO in accordance with the requirements outlined in CNSC [*REGDOC-2.9.1, Environmental Principles, Assessments and Protection Measures*](#). During the current licencing period, CNSC staff found that the JEB TMF continued to perform as expected. CNSC staff explained that its regulatory focus includes verifying water containment throughout the operation of the JEB TMF. In its EPR, CNSC staff found that the potential risks to human health and the environment from radiological and hazardous releases to the atmospheric, terrestrial, hydrogeological and aquatic environments from the proposed JEB TMF expansion are low to negligible.

¹⁸ ISO 14001:2015, Environmental management systems – Requirements with guidance for use

46. With respect to effluent and emissions related to the expansion of the JEB TMF, Orano explained that the expansion project did not require changes to its current operational protective measures. Orano reported that the release of COPCs from the JEB TMF during construction, operation, decommissioning and post-closure of the proposed expansion are expected to be within those considered for the currently approved JEB TMF, and that no environmental effects are predicted from the transport of COPCs to the downstream environment. Orano noted that it considered traditional land use, such as hunting, trapping and gathering, in evaluating the post-closure radiation exposure conditions. Orano's assessment found that the anticipated radiation exposure after decommissioning will be indistinguishable from natural background.
47. Orano submitted that it will implement some changes to its existing monitoring program with the proposed JEB TMF expansion project. Orano explained that it performs ongoing updates to its environmental monitoring program (EMP), to optimize monitoring activities and reflect changes in operational activities. Orano noted the importance of monitoring groundwater quality to provide an early indicator for COPC plume migration, and stated that it would add monitoring stations specific to the JEB TMF area within the framework of the existing EMP.
48. CNSC staff reported that Orano's EMP meets the requirements of Canadian Standards Association (CSA) standard¹⁹ N288.4, *Environmental monitoring programs at nuclear facilities and uranium mines and mills*. CNSC staff confirmed that the current MLO EMP requires little change to effectively monitor any potential risks from the proposed JEB TMF expansion project. Orano has implemented an ongoing groundwater monitoring program, which will be updated during the proposed JEB TMF expansion project and used to demonstrate containment of TMF water. Orano has also committed to implementing a post-decommissioning EMP focussed on the surrounding and downstream environments.
49. The Commission asked about the monitoring programs that exist in the vicinity of the MLO and how they interact with the local Athabasca Basin communities. A Cameco representative stated that the two programs in the Athabasca Basin are the Community Based Environmental Monitoring Program (CBEMP)²⁰ and the Eastern Athabasca Regional Monitoring Program (EARMP)²¹. The Cameco representative explained that both programs involve community members in sample collection and include water, fish and wildlife from areas indicated by community members. The representative added that the CBEMP is conducted in a specific community annually and that the results are available online. The Commission is pleased with the level of the community involvement in the various monitoring programs operating in the Athabasca Basin.

¹⁹ The CSA makes its nuclear series standards freely viewable to members of the public on its [website](#) by means of a guest account.

²⁰ The CBEMP was previously known as the Athabasca Working Group Program and was initiated in 2000.

²¹ The EARMP is managed by the Government of Saskatchewan, the CNSC, and industry partners including Orano and Cameco Corporation.

50. In addition to the environmental risk assessment (ERA) Orano prepared in 2016, Orano has assessed the impacts of the proposed JEB TMF expansion on the surrounding environment. CNSC staff reported that, over time, precipitation will infiltrate the TMF, resulting in a slow discharge of COPCs into the groundwater and surrounding lakes. In both likely and bounding scenarios, modelling results demonstrated that, for some COPCs, long-term surface water concentrations will be above the current baseline, but all contaminants are expected to remain below guideline levels²².
51. With respect to the long-term impacts of COPCs, CNSC staff identified that Orano had not provided a long-term assessment of the predicted COPC concentrations in the sediments of Fox Lake and Pat Lake. Orano has committed to conduct a long-term assessment to predict concentrations of COPCs in such sediments and assess their risk to the aquatic environment as part of the proposed JEB TMF expansion project. CNSC staff expressed that it expects Orano to consider additional mitigation measures to prevent any identified unreasonable risks. Additionally, Orano considered a hypothetical beyond design basis disruptive event at the request of CNSC staff. CNSC staff found that even under the hypothetical erosion of the TMF cover, there would be no additional risks to the aquatic environment beyond those that have already been evaluated by Orano.
52. The Commission asked CNSC staff to provide additional information on possible impacts to fish and fish habitat in relation to the MLO. CNSC staff explained that Orano's ERA considers all aquatic species and that selenium in some aquatic species was the only identified impact. Orano's recent update to the ERA demonstrated a significant reduction in future selenium impact following Orano's development of a selenium adaptive management plan. CNSC staff explained that Orano adopted a conservative action level on selenium to ensure that it is closely monitored. For the long-term, Orano committed to implement a mitigation treatment within the wastewater treatment plant in 2022.
53. In its submission, the English River First Nation (ERFN) ([CMD 21-H6.7](#)) raised concerns regarding the possible cumulative effects on the Wheeler River system. When asked about such possible cumulative effects, an SMOE representative confirmed that the EARMP is currently looking into cumulative effects. CNSC staff indicated that the EARMP has provided strong supporting evidence that there is no long-range transport of contaminants in the downstream environment. CNSC staff noted that the ERA includes assessing cumulative effects. The Commission is satisfied that cumulative effects in the Athabasca Basin have been adequately considered.

²² Guidelines for contaminant concentration are defined in the [Saskatchewan Surface Water Quality Objectives](#) and the [Canadian Council of Ministers of the Environment Water Quality Guidelines](#)

54. Asked about how Indigenous knowledge is incorporated in its analysis, CNSC staff indicated that, where Indigenous knowledge studies exist, the information is used to support reviews of licensee ERAs, which consider the consumption of a traditional diet. CNSC staff added that the CNSC's recently-published [Indigenous Knowledge Policy Framework](#) sets out the principles of how the CNSC works with Indigenous Knowledge and knowledge holders. CNSC staff noted that, through cooperation with the ERFN, samples of moose will soon be included in the CNSC's [Independent Environmental Monitoring Program](#). The Commission is satisfied that CNSC staff has begun to incorporate Indigenous Knowledge into its assessments and encourages continued efforts in this respect.
55. Having considered the comprehensive monitoring programs in place and the low-to-negligible risks demonstrated by Orano's ERA and CNSC staff's EPR, the Commission concludes that Orano will continue to adequately protect the health and safety of persons and the environment in the vicinity of the MLO during the construction and operation of the proposed JEB TMF expansion. Based on its assessment of the information provided on the record for this hearing regarding Orano's performance, the Commission is satisfied that Orano continues to meet regulatory requirements with respect to environmental protection. The Commission expects that Orano will continue to monitor, identify and assess potential risks to the environment, and apply appropriate mitigation measures, such as water treatment methods, to address elevated levels of selenium.

4.1.5 Waste Management

56. The Commission examined Orano's performance with respect to its waste management programs for the MLO, of which the JEB TMF is a core aspect. The waste management SCA covers 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. CNSC staff submitted an assessment of this SCA and rated Orano's performance with respect to waste management during the current licence period as satisfactory. Decommissioning, which is particularly relevant to the proposed JEB TMF expansion, is discussed in section 4.3.2.
57. Orano submitted that it has a waste management plan for the MLO that describes how waste is managed throughout the lifecycle of the MLO to the point of final disposal. Conventional and radioactive wastes are managed at the MLO in several locations, including the JEB TMF, clean rock piles, landfills, and other solid and liquid waste facilities. Orano tracks the volumes of waste and reports this information to the CNSC annually.
58. The Commission concludes that Orano will continue to safely manage waste at the MLO, including the JEB TMF, following the proposed licence amendment. Based on Orano's satisfactory performance during the current licence period, the Commission is satisfied that Orano's waste management program for the MLO meets regulatory

requirements and that CNSC staff will continue to verify compliance through desktop reviews and inspections to ensure that the MLO remains in regulatory compliance throughout the proposed JEB TMF expansion.

4.1.6 Management System

59. The management system SCA covers the framework that establishes the processes and programs required to ensure that the MLO achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture. CNSC staff submitted that it reviewed Orano's updated Integrated Management System (IMS) in 2019 and found that it meets the requirements of CSA standard N286-12, *Management System Requirements for Nuclear Facilities* and that the proposed amendment will not impact Orano's compliance in this regard.
60. Orano informed the Commission that activities at the MLO are described and facilitated through an IMS. Orano explained that its IMS is designed to meet standards from the ISO, and that it was recertified in each relevant ISO standard²³ in 2020. Orano committed to updating its IMS procedures, including governance, emergency response and public information, to reflect the JEB TMF expansion project.
61. The Commission concludes that Orano's change management system will accommodate the proposed licence amendment. Having considered Orano's performance in this SCA during the current licence period, the Commission is satisfied that Orano maintains a management system at the MLO that meets regulatory requirements. The Commission is also satisfied that Orano will continuously improve its management system during the current licence period in accordance with the appropriate ISO and CSA standards, and that CNSC staff will ensure that the JEB TMF expansion project is adequately reflected in Orano's IMS through ongoing compliance verifications.

4.1.7 Human Performance Management

62. The human performance management SCA covers activities that enable effective human performance through the development and implementation of processes that ensure a sufficient number of Orano personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties. CNSC staff reported that the proposed licence amendment will not impact Orano's ability to ensure effective human performance.

²³ ISO 14001, Environmental management systems; ISO 45001, Occupational health and safety management systems; and ISO 17025, Testing and calibration laboratories.

63. Orano informed the Commission that training activities at the MLO adhere to the Systematic Approach to Training (SAT) and are conducted in accordance with programs defined with the IMS. Orano explained that the SAT ensures that employees are provided with the required safety training to competently perform their jobs. Orano stated that its training programs are reviewed and updated routinely, and that these human performance management measures will be applied to the expansion of the JEB TMF.
64. The Commission concludes that Orano has the programs in place to ensure that workers receive adequate training to perform work related to the expansion of the JEB TMF. The Commission is satisfied that Orano's performance in this SCA demonstrates that Orano maintains satisfactory human performance management programs, and that CNSC staff's compliance verification activities are sufficient to ensure Orano remains in regulatory compliance.

4.1.8 Fitness for Service

65. The fitness for Service SCA covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. In its submission, CNSC staff confirmed that the proposed licence amendment will not impact Orano's programs at the MLO, which ensure structures and equipment remain effective and perform as designed over time.
66. Orano provided the Commission with information related to its preventative maintenance (PM) program and in-service inspection program. Orano's PM program is controlled through an electronic system. Orano performs in-service inspections on critical equipment, such as secondary containment, utilizing qualified tradespersons. Orano noted that its PM program ensures that systems, equipment and devices are maintained in good working order and within design specifications.
67. The Commission concludes that Orano has the programs in place to ensure that structures, systems and components remain effective and that these programs will ensure the necessary equipment for the expansion of the JEB TMF is fit for service. Based on Orano's fitness for service performance during the current licence period, the Commission is satisfied that Orano maintains satisfactory fitness for service programs and that CNSC staff's compliance verification activities are sufficient to ensure Orano remains in regulatory compliance.

4.1.9 Radiation Protection

68. The radiation protection SCA covers the implementation of a radiation protection (RP) program in accordance with the [Radiation Protection Regulations](#)²⁴ (RPR). CNSC staff reported that no worker or member of the public has received a radiation dose in excess of the CNSC regulatory limits²⁵ during the current licence period.
69. In its submission, Orano included details on its multi-element RP program. Orano's RP program is based on the principle of maintaining doses as low as reasonably achievable (ALARA). Routine radiological area monitoring is performed throughout the MLO to ensure doses are ALARA and includes quantitative sampling and contamination control monitoring. With respect to the proposed expansion of the JEB TMF, Orano evaluated the operational radiological conditions and determined that the expansion will not require changing the operational protective measures currently in place.
70. The Commission concludes that Orano's RP program does not require modifications to accommodate the proposed JEB TMF expansion. Having considered Orano's RP performance during the current licence period, including CNSC staff inspections, the Commission is satisfied that Orano has implemented and maintains a satisfactory RP program that meets regulatory requirements. The Commission is also satisfied that Orano will continue to keep radiation doses ALARA at the MLO and during the work to construct the proposed JEB TMF expansion.

4.1.10 Conventional Health and Safety

71. The conventional health and safety SCA covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment. CNSC staff reported that Orano has been proactive in identifying and managing risks to improve health and safety performance during the current licence period, and that it expects this to continue following the proposed licence amendment.
72. Orano informed the Commission that its conventional health and safety program at the MLO meets the ISO 45001:2018²⁶ standard. Orano detailed MLO injury statistics during the current licence period, including 6 lost time injuries. Orano reported that in January 2020, it implemented the health, safety and environment inspection program at the MLO with the objective of improving its safety culture. This program conducted 55 inspections and generated 52 actions, with 94% completed by the end of 2020.

²⁴ SOR/2000-203.

²⁵ The regulatory dose limit is 1 mSv in one calendar year for members of the public and 50 mSv in any one year and 100 mSv in five consecutive years for nuclear energy workers.

²⁶ ISO 45001:2018, Occupational health and safety management systems – Requirements with guidance for use

73. The Commission concludes that Orano will continue to adequately consider health and safety during the proposed JEB TMF expansion. Based on the information provided pertaining to health and safety at the MLO and Orano's performance during the current licence period, the Commission is satisfied that Orano's conventional health and safety program at the MLO meets regulatory requirements. The Commission is also satisfied that Orano has demonstrated that it adequately protects the health and safety of workers and the public, as demonstrated by CNSC staff verification activities and Orano's proactive approach to improving safety culture.

4.1.11 Emergency Management and Fire Protection

74. The emergency management and fire protection SCA covers plans and preparedness programs for emergencies and for non-routine conditions. Orano reported that it maintains an Emergency Response Team (ERT), which is trained to respond to emergencies at the MLO. Orano's Fire Protection Program (FPP) is designed to prevent uncontrolled fires from starting; detect, extinguish and control fires that do occur; and provide adequate protection to structures, systems and components. CNSC staff reported that Orano's implementation of its emergency preparedness and response program at the MLO meets regulatory requirements. CNSC staff found that Orano's FPP is acceptable and contains the elements to comply with the [National Fire Code of Canada 2015](#) and the [National Building Code of Canada 2015](#).
75. In its submission, Orano reported that its emergency response planning ensures that Orano can quickly respond to emergency situations. Orano indicated that it will integrate the response to a JEB TMF embankment failure into its planning. Orano noted that it updated its fire hazard assessment in 2020 to ensure compliance with CSA standard N393-13, *Fire protection for facilities that process, handle, or store nuclear substances*.
76. Asked how it prepares for potential emergency scenarios, an Orano representative explained that the ERT trains continuously, such as through mock response scenarios including fires, confined spaces, falls from heights, medical responses and vehicle collisions. With respect to the JEB TMF, the representative expressed that Orano is updating ERT documentation to include the JEB TMF embankment, which is under construction. The representative noted that mock scenarios will soon be conducted on the embankment, such as the unlikely scenario of an embankment breach.
77. The Commission concludes that Orano's emergency response planning, FPP and ERT are adequate to protect the health and safety of persons and the environment with respect to the proposed licence amendment. Having considered Orano's performance in this SCA during the current licence period, the Commission is satisfied that Orano's emergency management and fire protection programs satisfy regulatory requirements and that CNSC staff's compliance verification activities are sufficient to ensure Orano remains in regulatory compliance. The Commission is also satisfied that Orano has demonstrated that it adequately considers unlikely events related to the proposed JEB TMF expansion in its emergency planning and training activities.

4.1.12 Security

78. The security SCA covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity. CNSC staff reported that Orano has implemented a security program at the MLO that meets the requirements under the GNSCR to prevent the loss or unauthorized removal of nuclear substances, radioactive sources, or prescribed equipment or information. CNSC staff explained that the security risk at the MLO is considered low because of the remote location, the lack of incidents involving theft or sabotage, the percentage of long-term employees, and the lack of evidence of any threats to the operations.
79. Orano submitted that it implements and maintains security measures at the MLO to prevent the loss of nuclear substances and prevent acts of sabotage. The MLO is subject to a security threat and risk assessments (STRA) every 5 years. Orano indicated that the next STRA will be conducted and submitted to the CNSC in 2021 and recommendations made by CNSC staff are used to improve the overall program.
80. The Commission concludes that the proposed JEB TMF expansion project will not adversely affect the security of the MLO. Based on the information pertaining to Orano's security measures at the MLO and Orano's performance during the current license period, the Commission is satisfied that Orano has implemented a program to ensure the security of the MLO and that routine STRAs ensure that the security program at the MLO is up-to-date.

4.1.13 Safeguards and Non-Proliferation

81. Pursuant to the [*Treaty on the Non-Proliferation of Nuclear Weapons*](#)²⁷ (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 successful implementation of the obligations arising from the Canada/IAEA safeguards agreements, as well as other measures arising from the NPT.
82. In its submission, Orano stated that it maintains inventories for radioactive material, mostly uranium ore concentrate. Additionally, the IAEA, CNSC staff and internal Orano auditors conduct periodic audits of its inventory system. Orano also maintains uranium accountability controls and practices, which it stated comply with the applicable nuclear materials safeguards requirements.
83. CNSC staff explained that the non-proliferation program at the MLO is limited to the tracking and reporting of foreign obligations and origins of nuclear material. In 2019, CNSC staff received a request from the IAEA for complementary access to conduct an inspection of the MLO. CNSC staff and the IAEA were able to carry out all planned activities during the complementary access.

²⁷ SOR/2000-210.

84. The Commission concludes that Orano has the required program to ensure compliance with safeguards and non-proliferation and that this program will not be affected by the JEB TMF expansion. Based on the information provided regarding Orano's radioactive material inventories and IAEA inspections, the Commission is satisfied that Orano has implemented and maintains an effective program for safeguards measures and meeting nuclear non-proliferation commitments arising from Canada's international obligations under the NPT.

4.1.14 Packaging and Transport

85. The packaging and transport SCA covers the programs for the safe packaging and transport of nuclear substances to and from the MLO. CNSC staff informed the Commission that Orano has a packaging and transport program at the MLO that ensures compliance with the [*Packaging and Transport of Nuclear Substances Regulations, 2015*](#)²⁸ and [*Transport Canada's Transportation of Dangerous Goods Regulations*](#).
86. Orano reported that nuclear substances are transported to and from the MLO via public roads, railways and marine transports. Orano has procedures and supporting documents related to the handling, storing, loading, transporting and receipt of nuclear substances and other dangerous goods. Orano noted that employees involved in the radioactive shipment process receive specific training. Orano also maintains an emergency response assistance plan, approved by Transport Canada, for the transport of radioactive shipments, such as uranium concentrate.
87. The Commission concludes that the JEB TMF expansion project will not impact Orano's ability to meet the CNSC's expectations with respect to packaging and transport. Having considered Orano's performance in this SCA during the current licence period, the Commission is satisfied that Orano maintains a packaging and transport program that meets regulatory requirements.

4.2 Indigenous Engagement and Consultation

88. The Commission considered the various Indigenous engagement activities of Orano and CNSC staff in relation to this matter. Indigenous consultation refers to the common law duty to consult with Indigenous Nations and communities pursuant to section 35 of the [*Constitution Act, 1982*](#).²⁹ This is distinct from engagement activities conducted by the applicant and CNSC staff, carried out as part of the application process and on an ongoing basis.

²⁸ SOR/2015-145.

²⁹ *Constitution Act, 1982*, Schedule B to the *Canada Act 1982*, 1982, c. 11 (U.K.).

4.2.1 *Indigenous Consultation*

89. The common law duty to consult with Indigenous Nations and communities 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 Nations and communities. The CNSC ensures that its licensing decisions under the NSCA uphold the honour of the Crown and consider Indigenous Nations and communities' potential or established Indigenous and/or treaty rights pursuant to section 35 of the [Constitution Act, 1982](#).
90. 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".³⁰ Licensing decisions of the Commission, where Indigenous interests may be adversely impacted by its decision, will therefore engage the duty to consult, and the Commission must be satisfied that it has met the duty prior to making the relevant licensing decision.
91. CNSC staff submitted that since the JEB TMF expansion could have a potential interaction with the rights and interests of Indigenous Nations and communities, CNSC [REGDOC 3.2.2, Indigenous Engagement, Version 1.1](#) would apply to this licence amendment, requiring Orano to prepare an Indigenous engagement report. Following its review, CNSC staff found that the proposed licence amendment for the JEB TMF expansion is unlikely to cause any new impacts on Indigenous and/or treaty rights.
92. The Commission is satisfied with CNSC staff's efforts to engage with Indigenous Nations and communities who may have interest in the MLO, described in more detail in the following section. The efforts made by CNSC staff in this regard are key to the important work of the Commission toward reconciliation and relationship-building with Canada's Indigenous Nations and communities. For the purposes of this proposed licence amendment, the Commission is satisfied that its responsibility in this regard has been met.

4.2.2 *Indigenous Engagement*

93. CNSC staff submitted that it identified the following First Nation and Métis groups and organizations who may have an interest in the proposed JEB TMF expansion, due to their having previously expressed interest in being kept informed of CNSC licenced activities occurring in proximity to their traditional and/or treaty territories:
- English River First Nation (ERFN)
 - Birch Narrows Dene Nation
 - Buffalo River Dene Nation
 - Hatchet Lake Denesuline First Nation

³⁰ *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 at para 35

- Black Lake Denesuline First Nation
 - Fond-du-Lac Denesuline First Nation
 - Lac La Ronge Indian Band
 - Métis Nation-Saskatchewan (MN-S)
 - Ya'thi Néné Lands and Resources Office
 - Prince Albert Grand Council
 - Meadow Lake Tribal Council
94. CNSC staff reported that it has been engaging with the identified Indigenous Nations and communities concerning the MLO and the JEB TMF expansion since 2012. CNSC staff met in person with several Indigenous Nations and communities interested in the project in 2012 and 2013, including a workshop with Orano representatives where presentations were made to the Northern Saskatchewan Environmental Quality Committee. CNSC staff subsequently engaged with the identified communities with respect to the coming into force of the IAA, Orano's 2016 licence renewal application for the MLO, and the previously approved JEB TMF expansion. The engagement activities included community tours in 2017 and virtual meetings in 2020.
95. With respect to the current proposed JEB TMF expansion licence amendment application, CNSC staff sent letters of notification in February 2021 to all identified Indigenous Nations and communities. The letters provided information regarding Orano's application, the availability of participant funding through the CNSC's PFP, and details on how to participate in the public hearing process. CNSC staff noted that the identified Indigenous Nations and communities were encouraged to participate in the Commission public hearing process. CNSC staff sent follow-up emails in March 2021 and May 2021 to confirm receipt of the letters and to offer virtual meetings. CNSC staff reported that, as of the date of the hearing, CNSC staff had not been made aware of any specific concerns related to the proposed JEB TMF expansion at the MLO.
96. Orano submitted details on the 2016 Ya'thi Néné Collaboration Agreement (Collaboration Agreement), which replaced the 1999 Impact Management Agreement between Athabasca Basin communities, Orano and Cameco. Through the Collaboration Agreement, Orano and Cameco have invested funding into the Athabasca Basin communities. Orano noted that the Collaboration Agreement has resulted in the creation of joint committees that support the ongoing implementation of the agreement. One such joint committee is the Athabasca Joint Engagement and Environment Subcommittee (AJES).
97. In its submission, Orano included an updated Indigenous Engagement Report (CMD 21-H6.1, Appendix A), which was prepared in accordance with REGDOC 3.2.2. Orano indicated that a trap line crosses the southern boundaries of the site, which is compensated for through site access and a trappers' compensation agreement. CNSC staff stated that it continues to monitor Orano's progress against this report. CNSC staff stated that Orano has met the requirements set out in REGDOC 3.2.2 pertaining

to Indigenous engagement and noted that Orano is working towards addressing questions or concerns as appropriate.

98. The AJES intervention ([CMD 21-H6.5](#)) expressed support for Orano's proposed licence amendment and explained that the AJES meets a minimum of four times per year. The AJES includes one representative from each of Orano and Cameco, one representative from each of the Black Lake, Hatchet Lake and Fond du Lac Denesuline Nations, and one representative from the Athabasca municipalities (Uranium City, Camsell Portage, Stony Rapids and Wollaston Lake). The AJES indicated that community members are encouraged to bring forward any questions or concerns about the operations and the environment to their community's AJES representatives, who will raise them during the meetings. The AJES stated that Orano engages with it regularly regarding the JEB TMF.
99. The Commission asked how conflict resolution and the sharing of information was facilitated with the AJES. An Orano representative explained that there is a conflict resolution process which includes all parties involved in the Collaboration Agreement. The Orano representative added that prior to COVID-19, the AJES tried to hold one meeting per year at one of the mine sites. An AJES representative explained that the meetings are currently held by teleconference and that the community representatives present the information provided to the AJES to community leadership following each meeting. The Orano representative stressed the importance of the community being comfortable with the information provided and added that community leadership indicated that their preferred method of engagement would be through the AJES.
100. The ERFN intervention ([CMD 21-H6.7](#)) provided a review of the CNSC staff and Orano submissions, including relevant SCAs, and expressed support for Orano's proposed licence amendment. The ERFN raised six questions that it felt required more information from Orano. These questions considered the risk profile of the JEB TMF following the proposed expansion, impacts on the aquatic environment, and the assessed disruptive event. The ERFN explained that Orano had satisfactorily answered all of its questions. The Commission notes that Orano has provided its written responses to these questions in a supplementary submission ([CMD 21-H6.1B](#)). The Commission is satisfied that the information contained therein supports Orano's Indigenous engagement with respect to the proposed JEB TMF expansion.
101. When asked about its engagement with the CNSC, an ERFN representative stated that the ERFN is becoming more familiar and comfortable with the information and the processes of the CNSC. The representative noted that the CNSC has acknowledged the ERFN's right to be consulted even though the MLO is on the outside perimeter of its traditional territory. The ERFN expects to be able to state when and how it needs to be consulted.

102. The MN-S intervention ([CMD 21-H6.3](#), [CMD 21-H6.3A](#)) provided a review of the proposed JEB TMF expansion across 3 categories: the integrity of the TMF, human health, and engagement. The MN-S felt that engagement with the MN-S was insufficient and made 11 recommendations across the 3 categories. The MN-S noted that it is considering the future closure and legacy of the project, and that it would like to be involved to protect its long-term interests.
103. The Commission asked what efforts had been made to engage directly with the MN-S. CNSC staff explained that it meets with the MN-S roughly every two weeks on various files, but the MN-S had indicated that they did not need to meet to discuss the proposed JEB TMF expansion. An MN-S representative expressed that MN-S wants to be actively and meaningfully involved with Orano, and that it is not able to always keep up with the timelines of some projects occurring in Saskatchewan for which it wishes to be engaged. An Orano representative acknowledged that Orano's relationship with the MN-S is in its early stages and that Orano will work with the MN-S to address the 11 recommendations.
104. The Commission asked about the effect the restrictions related to the COVID-19 pandemic have had on ongoing engagement. A representative from the MN-S explained that the pandemic has presented logistical challenges regarding its ability to communicate with its individual communities, as well as with Orano. The representative highlighted the importance of the oral tradition to the MN-S and noted that not being able to gather in person has been difficult. The representative added that remote communities do not always have access to the technology or bandwidth required for virtual communications.
105. The Commission finds that Indigenous engagement activities carried out for the proposed licence amendment application were adequate on the basis that the proposed licence amendment does not give rise to potential new adverse impacts that engage the consultation duty and no further impacts to the health of persons or the environment beyond the existing MLO are expected. The Commission encourages Orano to continue to establish a direct relationship with the MN-S and expects Orano to provide the MN-S with responses to the MN-S's 11 recommendations. The Commission notes the difficulty in conducting engagement activities in remote communities virtually and acknowledges the efforts of CNSC staff and Orano regarding their respective Indigenous engagement activities.

4.2.3 Conclusion on Indigenous Consultation and Engagement

106. The Commission concludes that the proposed licence amendment will not result in changes to MLO operations that would cause adverse impacts to any potential or established Indigenous and/or treaty rights and is satisfied that the engagement activities taken for the review of the MLO licence amendment application have been

adequate.³¹ The Commission acknowledges the current efforts and commitments made by Orano in relation to Indigenous engagement, as well as CNSC staff's efforts in this regard on behalf of the Commission.

107. The Commission greatly values and appreciates the input and perspective of the English River First Nation and the Métis Nation – Saskatchewan as well as the Athabasca Joint Engagement and Environment Subcommittee in relation to this matter. The Commission expects Orano and CNSC staff to continue to build meaningful long-term relationships with Indigenous Nations and communities.

4.3 Other Matters of Regulatory Interest

108. The Commission examined other matters of regulatory interest with respect to Orano's application, including public engagement, decommissioning plans and financial guarantee, and cost recovery.

4.3.1 Public Engagement

109. The Commission assessed the adequacy of the public information and disclosure program (PIDP) for the MLO. A public information program is a regulatory requirement for licence applicants and licensees of Class I nuclear facilities, uranium mines and mills and certain Class II nuclear facilities, as detailed in CNSC [REGDOC-3.2.1, *Public Information and Disclosure*](#). CNSC staff's evaluation is that Orano meets regulatory requirements, and that Orano has demonstrated a commitment to disseminate appropriate and timely health and safety information to the public through various media.
110. Orano submitted that, through its PIDP, it shares information about the MLO to address perceived risks and provides an opportunity for two-way communication between Orano and members of the public. Orano detailed that its historic engagement activities related to the JEB TMF expansion began in 2011 and continued until 2015. Orano's engagement activities related specifically to the licence amendment application began in 2019. CNSC staff noted that social media has evolved significantly during the current licence period and that Orano has increased its online presence accordingly.
111. The Commission concludes that Orano has and will continue to keep Indigenous Nations and communities and the public informed of MLO operations and the proposed JEB TMF expansion. Having considered Orano's public information and disclosure performance during the current license period, the Commission is satisfied that Orano's PDIP meets regulatory requirements. The Commission acknowledges that Orano has implemented best practices, such as its use of social media, and encourages its efforts in creating, maintaining and improving its dialogue with neighbouring communities.

³¹ *Rio Tinto Alcan v. Carrier Sekani Tribal Council*, 2010 SCC 43[2010] 2 S.C.R. 650 at paras 45 and 49.

4.3.2 Decommissioning Plans and Financial Guarantee

112. The Commission requires that Orano have operational plans for the decommissioning and long-term management of waste produced during the lifespan of the MLO and a suitable financial guarantee to ensure that adequate resources are available for safe and secure future decommissioning of the MLO site. The SMOE and CNSC staff work closely in aligning and coordinating requirements, as defined in a memorandum of understanding between the two parties. Orano is obliged to meet the specifications of [G-219, *Decommissioning Planning for Licensed Activities*](#) and CSA standard N294-09, *Decommissioning of facilities containing nuclear substances*. The CNSC guidance document [G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*](#)³² provides regulatory guidance on financial guarantees and financial instruments and sets out the relevant considerations for adequacy.
113. CNSC staff reported that, in 2020 and in accordance with the required 5-year review cycle, Orano submitted a revised preliminary decommissioning plan (PDP) and cost estimate that included the proposed JEB TMF expansion. CNSC staff and the SMOE assessed the revised PDP and cost estimate and found that both meet regulatory requirements. CNSC staff stated that the cost estimate is adequate for decommissioning the MLO, including the expanded JEB TMF. The end-state objective following decommissioning is to return the site to a natural state.
114. 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 current licence period, pursuant to subsection 24(5) of the NSCA. CNSC staff submitted that Orano's proposed revised financial guarantee is \$102,098,000, which is a decrease from the previous value of \$107,241,000. This decrease is due primarily to the reduction in waste rock required to backfill the expanded JEB TMF and reduction in operation costs. The SMOE is the beneficiary of the financial guarantee and is the owner of the land.
115. The Commission asked about the financial instruments associated with the financial guarantee. An Orano representative responded that these remain letters of credit and surety bonds as previously accepted by the Commission with the current licence. Asked how the increase in costs over time is accounted for in the financial guarantee, CNSC staff explained that the PDP cost estimate includes contingencies of 15% to 25%. Additionally, the PDP accounts for a worst-case-scenario. CNSC staff noted that the 5-year review cycle of the PDP and associated cost estimate accounts for changes over time, such as inflation.
116. The Commission concludes that the preliminary decommissioning plan and related financial guarantee for the MLO are acceptable for the purpose of the licence amendment application. The Commission is satisfied that the cost estimate and the proposed financial guarantee amount are appropriate for safe and secure future

³² G-206 has since been superseded by CNSC [REGDOC 3.3.1, *Financial guarantees for decommissioning of nuclear facilities and termination of licensed activities*](#).

decommissioning of the MLO site and in accordance with CNSC requirements. The Commission is also satisfied with the proposed financial instruments of letter of credit and surety bond. As such, the Commission accepts the new quantum for the financial guarantee amount and accepts the instruments of letter of credit and surety bond, so long as they remain on the same terms as the existing instruments. As financial guarantees remain a matter for Commission acceptance, the Commission will consider any future updates to the financial guarantee quantum or form, as applicable.

4.3.3 Cost Recovery

117. The Commission examined Orano's standing under the [*Cost Recovery Fees Regulations*](#)³³ (CRFR) requirements for the MLO. Paragraph 24(2)(c) of the NSCA requires that a licence application be accompanied by the prescribed fee, as set out by the CRFR and based on the activities to be licensed. CNSC staff reported that Orano is in good standing with respect to the MLO meeting CNSC CRFR requirements.
118. Based on the information submitted by CNSC staff, the Commission is satisfied that Orano has met the requirements of the CRFR for the purpose of this proposed licence amendment.

4.4 Licence Amendments

119. In its submission, CNSC staff included a proposed licence and draft licence conditions handbook. This proposed licence retains the licence format, all existing licence conditions, and the licence period of the existing licence without change. CNSC staff proposed a change to section IV) *Licensed Activities* of the current licence to add the following licensed activity:
- b) modify the outer perimeter of the JEB tailings management facility for the vertical expansion up to 468 metres above sea level (mASL) and to accommodate disposal of tailings up to a consolidated tailings elevation of 462 mASL.
120. CNSC staff also recommended deleting the "O" (for "operating") from the current licence, UMOL-MINEMILL-McCLEAN.01/2027, to align with the CNSC's recent naming convention for licences. The proposed amended licence number is UML-MINEMILLMcCLEAN.02/2027.
121. The Commission is satisfied that the proposed amendment clearly reflects the additional activity to be licensed (i.e., the expansion of the JEB TMF) and accepts the proposed amended licence as recommended by CNSC staff. The amended licence remains valid until June 30, 2027. The Commission notes that CNSC staff can bring any matter to the Commission as required.

³³ SOR/2003-212.

5.0 CONCLUSION

122. The Commission has considered Orano's application to amend the McClean Lake Operation uranium mine and mill licence for the purpose of expanding the JEB tailings management facility. The Commission has also considered the information and submissions of Orano and CNSC staff, as well as the interventions submitted for the hearing. Based on its consideration of the evidence on the record, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the uranium mine and mill licence issued to Orano for the McClean Lake Operation located in northern Saskatchewan. The amended licence, UML-MINEMILL-McCLEAN.02/2027, remains valid until June 30, 2027.

Velshi, Rumina

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January 13, 2022

Rumina Velshi
President,
Canadian Nuclear Safety Commission

Date

Appendix A – Intervenors

| Intervenors – Oral Presentations | Document Number |
|--|-----------------------------|
| English River First Nation, represented by Elder I. Campbell, Chief J. Bernard, C. Campbell and R. Kusch | CMD 21-H6.7 |
| Métis Nation-Saskatchewan, represented by Elder F. Natomagan, M. Calette and H. Klein | CMD 21-H6.3 CMD 21-H6.3A |
| Athabasca Joint Engagement and Environmental Subcommittee, represented by Elder G. McDonald | CMD 21-H6.5 |
| Cameco Corporation, represented by L. Mooney, K. Nagy and K. Cuddington | CMD 21-H6.6 CMD 21-H6.6A |
| Intervenors – Written Submissions | Document Number |
| Unifor Local 48-s | CMD 21-H6.2 |
| Denison Mines Corp. | CMD 21-H6.4 |