



UNPROTECTED/NON PROTÉGÉ

ORIGINAL/ORIGINAL

CMD: 19-H105

Date signed/Signé le : MAY 21, 2019

Reference CMD(s)/CMD(s) de référence : 09-H7

Issue required approval(s) for

Délivrer l'approbation requise pour

Cameco Corporation

Cameco Corporation

**McArthur River
Operation**

**Établissement de
McArthur River**

**Financial Guarantee
Review and Licence
Modernization
Amendments**

**Examen de la garantie
financière et
modifications relatives
à la modernisation de
permis**

Hearing in writing based on
written submissions

Audience par écrit fondée sur les
mémoires soumis

Scheduled for:
June 2019

Prévue le :
Juin 2019

Submitted by:
CNSC staff

Soumise par :
Le personnel de la CCSN

Summary

This Commission Member Document (CMD) pertains to a request for a decision regarding:

- the revision of Cameco Corporation's financial guarantee for the McArthur River uranium mine; and
- the amendment of Cameco Corporation's McArthur River Uranium Mine Licence (UMOL-MINE-MCARTHUR.00/2023) to include standard licence conditions.

The following actions are requested of the Commission:

- accept the proposed revised value of Cameco Corporation's financial guarantee for the McArthur River uranium mine;
- amend Cameco Corporation's McArthur River Operation Uranium Mine Licence (UMOL-MINE-MCARTHUR.00/2023) to conform to a standardized licence format; and
- direct Cameco Corporation to submit to the Commission, within 90 days of the publication of a decision, revised financial instruments that are acceptable to the Commission.

The following items are attached:

- current licence UMOL-MINE-MCARTHUR.00/2023;
- proposed amended licence UML-MINE-MCARTHUR.01/2023;
- current Licence Conditions Handbook, Revision 2; and
- proposed Licence Conditions Handbook, Revision 3.

Résumé

Le présent document à l'intention des commissaires (CMD) concerne une demande de décision au sujet de :

- la révision de la garantie financière de Cameco Corporation pour la mine d'uranium de McArthur River;
- la modification du permis d'exploitation de la mine d'uranium de McArthur River de Cameco Corporation (UMOL-MINE-MCARTHUR.00/2023) pour y inclure des conditions de permis normalisées.

La Commission pourrait considérer prendre les mesures suivantes :

- accepter la valeur révisée de la garantie financière proposée de Cameco Corporation pour la mine d'uranium de McArthur River;
- modifier le permis d'exploitation de la mine d'uranium de McArthur River de Cameco Corporation (UMOL-MINE-MCARTHUR.00/2023) pour adhérer à un format de permis normalisée;
- demander à Cameco Corporation de présenter à la Commission, dans les 90 jours suivant la publication de la décision, des instruments financiers révisés qui sont acceptables pour la Commission.

Les pièces suivantes sont jointes :

- permis actuel UMOL-MINE-MCARTHUR.00/2023;
- permis modifié proposé UML-MINE-MCARTHUR.01/2023;
- Manuel des conditions de permis actuel, révision 2;
- Manuel des conditions de permis proposé, révision 3.

Signed/Signé le

May 21, 2019



Haidy Tadros

Director General

Directorate of Nuclear Cycle and Facilities Regulation

Directrice générale de la

Direction de la réglementation du cycle et des installations nucléaires

This page was intentionally left blank.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
PART ONE	3
1 OVERVIEW.....	3
1.1 <i>Background</i>	3
1.2 <i>Highlights</i>	5
2 MATTERS FOR CONSIDERATION	5
2.1 <i>Preliminary Decommissioning Plan and Preliminary Decommissioning Cost Estimate</i>	5
2.2 <i>Financial Guarantee</i>	6
2.3 <i>Proposed Licence Standardization</i>	6
3 OVERALL CONCLUSIONS AND RECOMMENDATIONS.....	13
3.1 <i>Overall Conclusions</i>	13
3.2 <i>Overall Recommendations</i>	13
REFERENCES	14
ACRONYMS	15
APPENDIX A: MCARTHUR RIVER GENERAL SITE LAYOUT MAP	16
APPENDIX B: BASIS FOR THE RECOMMENDATION(S)	17
PART TWO.....	19
CURRENT LICENCE.....	20
PROPOSED AMENDED LICENCE.....	21
CURRENT LICENCE CONDITIONS HANDBOOK	22
PROPOSED LICENCE CONDITIONS HANDBOOK	23

This page was intentionally left blank.

EXECUTIVE SUMMARY

Under the *Nuclear Safety and Control Act*, a licence may contain a term or condition whereby a financial guarantee is required.

Accordingly, licence condition 12.3 of Cameco Corporation's current McArthur River Operation licence (UMOL-MINE-MCARTHUR.00/2023) requires the licensee to maintain a financial guarantee that is acceptable to the Commission; the financial guarantee must be reviewed and updated every five years or when there are material changes to operational activities.

To fulfill the five-year update requirement, on April 16, 2019 Cameco Corporation submitted a request to the Canadian Nuclear Safety Commission (CNSC) to update their financial guarantee for the McArthur River uranium mine. This request included a proposed revision to the value of Cameco Corporation's financial guarantee from C\$48.4 million to C\$42.1 million based on a decommissioning tomorrow principle. This change in the financial guarantee triggers an amendment to its licence (UMOL-MINE-MCARTHUR.00/2023) which will be updated to the generic licence conditions and licence conditions handbook (LCH) format.

As part of this request, Cameco Corporation submitted its Preliminary Decommissioning Plan and Preliminary Decommissioning Cost Estimate. Following the review, both the Saskatchewan Ministry of Environment and CNSC staff concluded that the Preliminary Decommissioning Plan and Preliminary Decommissioning Cost Estimate were credible for future decommissioning of the McArthur River Operation. Based on CNSC staff's review and assessment of Cameco Corporation's submitted information, CNSC staff recommend that the Commission:

- accept the proposed revised value of Cameco Corporation's financial guarantee for the McArthur River uranium mine;
- amend Cameco Corporation's McArthur River Operation Uranium Mine Licence (UMOL-MINE-MCARTHUR.00/2023) to conform to a standardized licence format; and
- direct Cameco Corporation to submit to the Commission, within 90 days of the publication of a decision, revised financial instruments that are acceptable to the Commission.

The documents referenced in this CMD are available to the public upon request.

This page was intentionally left blank.

PART ONE

1 OVERVIEW

1.1 Background

Operated by Cameco Corporation (Cameco), the McArthur River Operation (MRO) is located approximately 620 kilometres north of Saskatoon, Saskatchewan (figure 1). Facilities and infrastructure at the MRO include an underground uranium mine, freeze isolation (isolating mine workings from potential water inflow), ore processing, waste management, water treatment, office and administrative buildings. High grade MRO ore is ground into a slurry and trucked to Cameco's Key Lake facility for processing into calcined yellowcake. All tailings resulting from the processing of McArthur River ore are stored in the Deilmann tailings management facility at the Key Lake site.

Figure 1: McArthur River Operation - location map



Exploration activities in the MRO area began in 1980, with discovery of the MRO orebody in 1988. Following the formation of a joint federal/provincial panel in 1991, the environmental assessment was finalized in June 1996 followed by the announcement of government support for the project in May 1997. The Atomic Energy Control Board (AECB), the predecessor of the Canadian Nuclear Safety Commission (CNSC), issued regulatory approval to construct the underground and surface facilities in 1997 and 1998. Production began at the MRO following receipt of an operating licence from the AECB in 1999.

Following an October 2013 public hearing and pursuant to section 24 of the *Nuclear Safety and Control Act* (NSCA), the Commission renewed the *Uranium Mine Licence, Cameco Corporation, McArthur River Operation*. A revised Preliminary Decommissioning Plan and Preliminary Decommissioning Cost Estimate (PDPCE) (2013) [1] was also approved as part of the 2013 licence renewal process. The current MRO licence is valid to October 31, 2023.

The updated financial guarantee is based on the MRO-specific Preliminary Decommissioning Plan (PDP) [2], which outlines the end state of the project and the steps the licensee will take to reach that end state. A revised MRO-specific Preliminary Decommissioning Cost Estimate (PDCE) [3] outlines the basis for the value of the financial guarantee and is based on the project end state as described in the PDP [2]. CNSC specialists review and assess the PDPCE [2, 3] against a CSA Group standard and CNSC regulatory documents (appendix B) which results in a determination on the acceptability of the PDP [4] and credibility of the PDCE [4].

Under *The Mineral Industry Environmental Protection Regulations, 1996*, the Saskatchewan Ministry of Environment (SMOE) requires that mining and milling operations prepare decommissioning plans and financial assurances. SMOE's independent review of the MRO PDPCE and financial assurance (equivalent to the term financial guarantee under the NSCA) is complementary to CNSC staff's review.

A memorandum of understanding, between the CNSC and the province of Saskatchewan on reclamation and financial guarantees, guide the nature of the cooperation between the parties [5]. The memorandum of understanding stipulates that it is not intended to require owners and/or operators of uranium mining and milling facilities in Saskatchewan to provide separate and distinct financial guarantees to satisfy federal and provincial requirements. The CNSC and SMOE work closely in aligning and coordinating decommissioning and financial guarantee requirements. The SMOE provides conditional acceptance of the financial guarantee until it is approved by the Commission. The SMOE is the owner of the lands and beneficiary of the financial guarantee for all operating and decommissioned uranium mines and mills in Saskatchewan. The CNSC or SMOE can invoke the Commission-approved financial guarantee to ensure decommissioning is carried out under extenuating circumstances such as bankruptcy or a failure of the licensee to meet regulatory requirements.

1.2 Highlights

The following is a summary of the financial guarantee regulatory review:

- Cameco submitted to the CNSC and SMOE for review, a revised PDP (2018) [2] and a revised PDCE (2018) [3].
- CNSC staff reviewed and concluded the revised PDP (2018) [2] and PDCE (2018) [3] met the criteria of CNSC regulatory guides and documents (appendix B).
- SMOE conditionally accepted the updated PDP (2018) and PDCE (2018) on April 11, 2019 [6].
- Cameco submitted the formal request for the Commission to update the value of Cameco's McArthur River Operation financial guarantee and amend its McArthur River Uranium Mine Operating Licence (UMOL-MINE-MCARTHUR.00/2023) to a format that includes standard licence conditions [7] on April 16, 2019.
- CNSC staff generated a proposed amended licence, standard draft licence conditions handbook (LCH) and this Commission Member Document (CMD).

2 MATTERS FOR CONSIDERATION

2.1 Preliminary Decommissioning Plan and Preliminary Decommissioning Cost Estimate

In accordance with paragraph 3(a)(viii) of the *Uranium Mines and Mills Regulations*, Cameco is required to maintain a proposed plan to decommission the MRO. Planning for decommissioning is an ongoing process, taking place throughout each stage of the licensed facility lifecycle. PDPs at operating uranium mines and mills are updated and submitted at a minimum every five years or as a result of material changes to operational activities. PDPs provide the basis for revision of the cost estimate for decommissioning and establishing the value of the financial guarantee. Currently, the MRO PDP is submitted for planning purposes only. Cameco is required to develop a Detailed Decommissioning Plan following the end of production and prior to beginning decommissioning.

In accordance with the requirement to update the financial guarantee every five years, as specified under licence condition 12.3, on January 29, 2018 Cameco submitted to the CNSC and SMOE a revised PDPCE (2018) [2,3]. The revised PDP (2018) [2] contained no significant modifications or deviations from the design decommissioning conditions outlined in the PDP (2013) [1]. The revised PDPCE (2018) [2,3] supports a reduction in the value of the financial guarantee from C\$48.4 million to C\$42.1 million based on a decommissioning tomorrow scenario which includes planned facilities and activities until the next financial guarantee update planned during the licence renewal in 2023. Changes in the revised PDPCE (2018) [2,3] included an annual discount rate, corrected for

inflation and reflecting the published Government of Canada benchmark bond yields. The revised PDPCE (2018) also included the removal of the costs for an additional Environmental Impact Statement prior to beginning decommissioning. Experience at other facilities has allowed Cameco to further refine some of the costs associated with decommissioning the site. Efficiencies in site decommissioning management, equipment costs, revegetation and contouring costs were also realized compared to the PDPCE (2013) [1]. The reduced value of the revised PDPCE (2018) [2,3] is appropriate and reflects all major decommissioning activities, including decommissioning of underground workings, surface and underground infrastructure, waste management, project management, regulatory oversight, time and institutional control necessary to decommission the MRO as planned. The PDPCE (2018) has applied variable contingencies ranging from 10 to 20 percent to the majority of decommissioning costs.

On April 11, 2019 the SMOE submitted a letter to Cameco [7] that provided tentative acceptance of the revised PDPCE (2018) on the condition that the agreed upon amendments are submitted in a revised PDPCE for final approval. As a result, the CNSC and SMOE have both reviewed the revised PDPCE (2018) [2,3] and conclude the documents meet the respective federal and provincial regulatory requirements.

2.2 Financial Guarantee

Cameco continues to use letters of credit as financial guarantee instruments that meet the criteria in CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities* (appendix B). In contrast to G-206, the province of Saskatchewan is the beneficiary as specified on the letters of credit comprising the current financial guarantee. The cooperative relationship between the SMOE and CNSC in matters relating to the financial guarantee is outlined through a memorandum discussed previously in section 1.1 of this CMD. Cameco submitted financial guarantee instruments in the form of letters of credit for the current licence that total C\$48.4 million. Should the Commission choose to approve the amended financial guarantee amount of C\$42.1 million, Cameco will provide new letters of credit as financial guarantee instruments. CNSC staff will review and confirm the financial guarantee instruments meet CNSC regulatory requirements.

2.3 Proposed Licence Standardization

In an effort to promote clarity and consistency of language, the CNSC is in the process of implementing standard licence conditions for all CNSC licences and standardized text for the uranium mines and mills licence conditions handbook (LCH). The update is considered to be administrative in nature and will not have a material change on daily operations for the MRO. The proposed McArthur River LCH has been developed in accordance with CNSC procedures and guidance.

Existing to Proposed Licence Changes

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
	"Draft" is on the document.	-DELETE ROW- Administration to correct during process.
First page - File number and directorate name are at the top on the first page.	File number and directorate name are not on the header.	-DELETE ROW- Administration to correct during process.
Page 2 and remaining pages: "Licence" on top right page of header.	Page 2 and remaining pages: Top right page of header: Licensee and Operation name on first line, title of licence on second line.	If pages are separated, apparent to which licence the page belongs to.
Roman numerals following IV) LICENSED ACTIVITIES and V) EXPLANATORY NOTES	Alphabetical following IV) LICENSED ACTIVITIES and V) EXPLANATORY NOTES	Change from roman numerals to alphabetical following the key headings. Eliminate possible confusion towards numbering.
D) LICENCE NUMBER: UMOL-MINE-MCARTHUR.00/2023	D) LICENCE NUMBER: UML-MINE-MCARTHUR.01/2023	New version.
III) LICENCE PERIOD: This licence is valid from November 1, 2013 to October 31, 2023, unless otherwise suspended, amended, revoked, replaced or transferred.	III) LICENCE PERIOD - This licence is valid from August 1, 2019 to October 31, 2023, unless suspended, amended, revoked, replaced or transferred.	Start date modified.
IV) LICENSED ACTIVITIES iii) Import, possess, use, store, transfer and dispose of nuclear substances and radiation devices that are required for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices in relation to (i) and (ii).	IV) LICENSED ACTIVITIES c) possess, transfer, import, use, store, and dispose of nuclear substances	Nuclear substances and prescribed equipment separated and activities brought in line with activities permitted under the NSCA for nuclear substances. Authorized activities listed in order of the NSCA.
IV) LICENSED ACTIVITIES iii) Import, possess, use, store, transfer and dispose of nuclear substances and radiation devices that are required for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices in relation to (i) and (ii).	IV) LICENSED ACTIVITIES d) possess, transfer, import, use, store prescribed equipment that is required for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices in relation to (a) and (b).	Nuclear substances and prescribed equipment separated and activities brought in line with activities permitted under the NSCA for nuclear substances. Authorized activities listed in order of the NSCA.

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
<p>V) EXPLANATORY NOTES: iii) The UMOL-MINE-MCARTHUR.00/2023</p>	<p>V) EXPLANATORY NOTES: c) The UMOL-MINE-MCARTHUR.01/2023</p>	New version.
<p>V) EXPLANATORY NOTES: iii) The LCH also provides information regarding delegation of authority and applicable version control of documents.</p>	<p>V) EXPLANATORY NOTES: e) The LCH also provides information regarding delegation of authority and applicable version control of documents comprising compliance verification criteria.</p>	New standardized text.
<p>VI) CONDITIONS: 1. GENERAL</p>	<p>VI) CONDITIONS: G. GENERAL</p>	New standardized text.
<p>1.1 The licensee shall conduct the activities described in Part IV of this licence in accordance with the objective of the licensing basis.</p>	<p>G.1 Licensing Basis for Licensed Activities The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:</p> <ul style="list-style-type: none"> (i) the regulatory requirements set out in the applicable laws and regulations (ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence (iii) the safety and control measures described in the licence application and the documents needed to support that licence application <p>unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter “the Commission”).</p>	New standardized text.
<p>1.2 Changes to the facility, its operation, or safety and control measures described in the application and the documents needed to support that application are permitted provided that the objectives of the licensing basis is met.</p> <p>1.3 The licensee shall give written notification to the Commission of any changes made to the documents needed to support the licence application.</p>	<p>G.2 Notification of Changes The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.</p>	New standardized text.

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
1.4 The licensee shall, in the event of any conflict or inconsistency between licence conditions or any documents referenced in the LCH, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.		Text removed.
12.3 The licensee shall maintain a financial guarantee acceptable to the Commission. The financial guarantee shall be reviewed and updated every five years or if there are material changes.	G.3 Financial Guarantee The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.	Five year requirement moved to the LCH.
1.5 The licensee shall implement and maintain a program for public information for the facility, including a public disclosure protocol.	G.4 Public Information and Disclosure The licensee shall implement and maintain a public information and disclosure program.	Standardized text.
<p>2. MANAGEMENT SYSTEM</p> <p>2.1 The licensee shall implement and maintain a management system.</p> <p>2.2 The licensee shall ensure that every contractor working at the facility complies with the applicable conditions of this licence including those relating to the licensee's policies, programs, and procedures with respect to the protection of health, safety, and the environment, and to the maintenance of security.</p>	<p>1. MANAGEMENT SYSTEM</p> <p>1.1 Management System</p> <p>The licensee shall implement and maintain a management system.</p>	Condition 2.2 Not required as already covered in GNSCR 12(e). Not a standard condition.
<p>3. HUMAN PERFORMANCE MANAGEMENT</p> <p>3.1 The licensee shall implement and maintain a training program.</p>	<p>2. HUMAN PERFORMANCE MANAGEMENT</p> <p>2.1 Training Program</p> <p>The licensee shall implement and maintain a training program.</p>	Minor change to title.

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
<p>4. OPERATING PERFORMANCE</p> <p>4.1 The licensee shall implement and maintain an operating program.</p> <p>4.2 The licensee shall implement and maintain a process for reporting to the Commission or a person authorized by the Commission that includes reporting of all events required by the <i>Nuclear Safety and Control Act</i> and its Regulations.</p> <p>4.3 The nuclear substances and radiation devices possessed by the licensee shall not exceed:</p> <p>a) The possession limit for unsealed sources; and</p> <p>b) The maximum activity per sealed source or device; approved by the Commission or a person authorized by the Commission.</p>	<p>3. OPERATING PERFORMANCE</p> <p>3.1 Operations Program The licensee shall implement and maintain an operating program, which includes a set of operating limits.</p> <p>3.2 Reporting Requirements The licensee shall implement and maintain a program for reporting to the Commission or a person authorized by the Commission.</p> <p>3.3 Nuclear Substances and Radiation Devices The licensee shall implement and maintain a program for nuclear substances and radiation devices.</p>	<p>Uranium mines and mills operating limits are required through the <i>Metal Mines Effluent Regulations</i>.</p> <p>Nuclear substance standard condition applied. Further information on expectations to meet licence conditions is provided in the licence conditions handbook.</p>
<p>5. SAFETY ANALYSIS</p> <p>5.1 The licensee shall implement and maintain a safety analysis program.</p>	<p>4. SAFETY ANALYSIS</p> <p>4.1 Safety Analysis Program The licensee shall implement and maintain a safety analysis program.</p>	<p>Minor change to text.</p>
<p>6. PHYSICAL DESIGN</p> <p>6.1 The licensee shall implement and maintain a design program.</p>	<p>5. PHYSICAL DESIGN</p> <p>5.1 Design Program The licensee shall implement and maintain a design program.</p>	<p>Minor change to text.</p>
<p>7. FITNESS FOR SERVICE</p> <p>7.1 The licensee shall implement and maintain a maintenance program.</p>	<p>6. FITNESS FOR SERVICE</p> <p>6.1 Fitness for Service Program The licensee shall implement and maintain a fitness for service program.</p>	<p>Minor change to text.</p> <p>Change in terminology has no impact on required submissions or content of submissions from licensees.</p>

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
<p>8. RADIATION PROTECTION</p> <p>8.1 The licensee shall implement and maintain a radiation protection program.</p>	<p>7. RADIATION PROTECTION</p> <p>7.1 Radiation Protection Program</p> <p>The licensee shall implement and maintain a radiation protection program, which includes a set of action levels. When the licensee becomes aware that an action level has been reached, the licensee shall notify the Commission within 24 hours.</p>	<p>Minor change to text.</p> <p>Licensee already has a Radiation Code of Practice which includes a requirement to notify the Commission within 24 hours of triggering an action level.</p>
<p>9. CONVENTIONAL HEALTH AND SAFETY</p> <p>9.1 The licensee shall implement and maintain an occupational health and safety program.</p>	<p>8. CONVENTIONAL HEALTH AND SAFETY</p> <p>8.1 Conventional Health and Safety Program</p> <p>The licensee shall implement and maintain a conventional health and safety program.</p>	<p>Minor change to titles.</p>
<p>10. ENVIRONMENTAL PROTECTION</p> <p>10.1 The licensee shall implement and maintain an environmental protection program.</p> <p>10.2 The licensee shall where the effluent concentration reaches or exceeds the discharge limits in the <i>Metal and Diamond Mining Effluent Regulations</i>, immediately take corrective action and investigate.</p>	<p>9. ENVIRONMENTAL PROTECTION</p> <p>9.1 Environmental Protection Program</p> <p>The licensee shall implement and maintain an environmental protection program, which includes a set of action levels. When the licensee becomes aware that an action level has been reached, the licensee shall notify the Commission within 24 hours.</p>	<p>Minor change to titles.</p> <p>Licensee already has an Environmental Code of Practice which includes a requirement to notify the Commission within 24 hours of triggering an action level.</p> <p><i>Metal and Diamond Mining Effluent Regulations</i> (MDMER) is a regulatory requirement which includes information on various reporting requirements throughout the document. A licence condition is not necessary to ensure the MDMER is applicable.</p>

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
<p>11. EMERGENCY MANAGEMENT AND FIRE PROTECTION</p> <p>11.1 The licensee shall implement and maintain an emergency management and fire protection program.</p>	<p>10. EMERGENCY MANAGEMENT AND FIRE PROTECTION</p> <p>10.1 Emergency Preparedness Program The licensee shall implement and maintain an emergency preparedness program.</p> <p>10.2 Fire Protection Program The licensee shall implement and maintain a fire protection program.</p>	<p>Minor change to text and titles.</p> <p>Serration of emergency preparedness (management) and fire protection.</p>
<p>12. WASTE MANAGEMENT</p> <p>12.1 The licensee shall implement and maintain a waste management program.</p> <p>12.2 The licensee shall maintain a preliminary decommissioning plan for the facility.</p>	<p>11. WASTE MANAGEMENT</p> <p>11.1 Waste Management Program The licensee shall implement and maintain a waste management program.</p> <p>11.2 Decommissioning Strategy The licensee shall maintain a decommissioning plan.</p>	
<p>12.3 The licensee shall maintain a financial guarantee acceptable to the Commission. The financial guarantee shall be reviewed and updated every five years or if there are material changes.</p>	<p>G.3 Financial Guarantee The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.</p>	<p>Second time change appears in table.</p> <p>Minor change to text.</p> <p>Five year requirement is specified in the licence conditions handbook.</p>
<p>13. SECURITY</p> <p>13.1 The licensee shall implement and maintain a security program.</p>	<p>12. SECURITY</p> <p>12.1 Security Program The licensee shall implement and maintain a security program.</p>	<p>Minor change to text – added title.</p> <p>Minor change to text.</p>
<p>14. SAFEGUARDS AND NON-PROLIFERATION</p> <p>14.1 The licensee shall implement and maintain a safeguards and non-proliferation program.</p>	<p>13. SAFEGUARDS AND NON-PROLIFERATION</p> <p>13.1 Safeguards Program The licensee shall implement and maintain a safeguards program.</p>	<p>Minor change to text and added title.</p>

CURRENT LICENCE	PROPOSED LICENCE	RATIONAL OR COMMENTS
<p>15. PACKAGING AND TRANSPORT</p> <p>15.1 The licensee shall implement and maintain a packaging and transport program.</p>	<p>14. PACKAGING AND TRANSPORT</p> <p>14.1 Packaging and Transport Program</p> <p>The licensee shall implement and maintain a packaging and transport program.</p>	Minor change to text.
<p>Michael Binder, President on behalf of the Canadian Nuclear Safety Commission</p>	<p>Rumina Velshi, President on behalf of the Canadian Nuclear Safety Commission</p>	New President.

3 OVERALL CONCLUSIONS AND RECOMMENDATIONS

3.1 Overall Conclusions

CNSC staff have concluded that:

- the revised PDP (2018) meets the requirements of CSA Group standard N294-09, *Decommissioning of Facilities Containing Nuclear Substances* and CNSC Regulatory Guide G-219, *Decommissioning Planning for Licensed Activities*;
- the revised PDCE (2018) meets the requirements of CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*; and
- the revised PDCE (2018) is acceptable to meet the remaining detailed decommissioning activities described within the updated PDP (2018) [2,3].

3.2 Overall Recommendations

CNSC staff recommend the following to the Commission:

- accept the proposed revised value of Cameco Corporation's financial guarantee for the McArthur River uranium mine;
- amend Cameco Corporation's McArthur River Operation Uranium Mine Licence (UMOL-MINE-MCARTHUR.00/2023) to conform to a standardized licence format; and
- direct Cameco Corporation to submit to the Commission, within 90 days of the publication of a decision, revised financial instruments that are acceptable to the Commission.

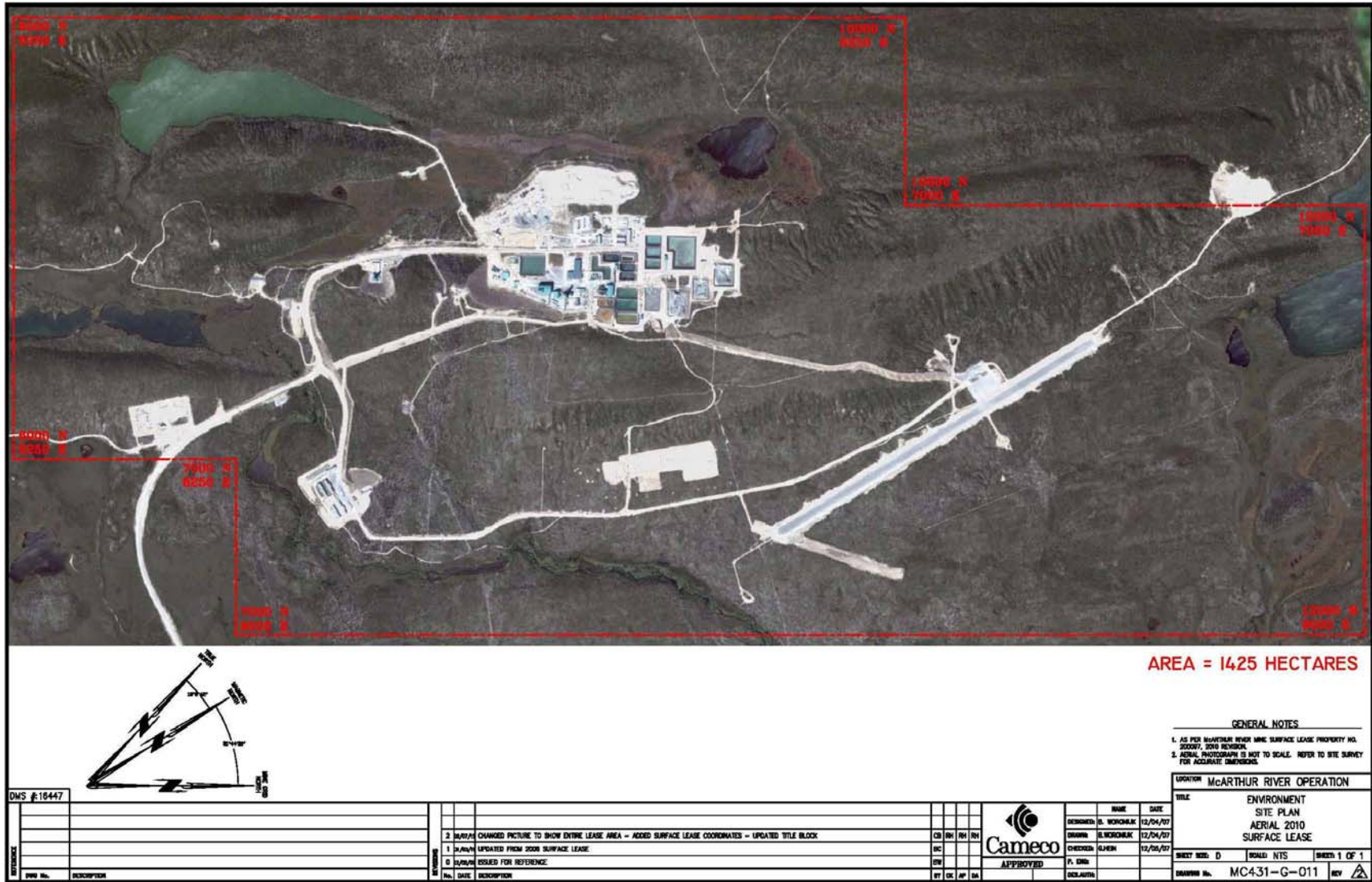
REFERENCES

- [1] Correspondence from Mr. R. Morrison (Cameco) to Ms. S. Eaton (CNSC), McArthur River Operation, “Preliminary Decommissioning Plan and Cost Estimate”, December 12, 2012 (e-Doc 4053027).
- [2] Correspondence from Ms. D. McIntyre (Cameco) to Mr. J. Glover (CNSC), “McArthur River Operation: **Preliminary Decommissioning Plan** and Cost Estimate”, January 29, 2018 (e-Doc 5445509).
- [3] Correspondence from Ms. D. McIntyre (Cameco) to Mr. J. Glover (CNSC), “McArthur River Operation: Preliminary Decommissioning Plan and **Cost Estimate**”, January 29, 2018 (e-Doc 5445509).
- [4] CNSC Memorandum from Mr. R. Lall and Ms. J. Truong (WDD) to Mr. J. Glover (UMMD), “Review of Preliminary Decommissioning Plan, Cost Estimate and Financial Guarantee for Decommissioning for Cameco Corporation’s McArthur River Operation”, April 10, 2018 (e-Doc 5491897).
- [5] *Memorandum of Understanding between Saskatchewan and AECEB*, Atomic Energy Control Board, September 1996 (e-Doc 3816864).
- [6] Correspondence from Mr. G. Bihun (SMOE) to Ms. D. McIntyre (Cameco), “2018 McArthur River Operation Preliminary Decommissioning Plan and Decommissioning Cost Estimate”, April 11, 2019 (e-Doc 5883187).
- [7] Correspondence from Ms. D. McIntyre (Cameco) to Mr. J. Glover (CNSC), “McArthur River Operation: Request to Update the Value of Financial Guarantee and Update Licence to Reflect Standard Licence Conditions”, April 16, 2019 (e-Doc 5882381).

ACRONYMS

AECB	Atomic Energy Control Board
CNSC	Canadian Nuclear Safety Commission
CMD	Commission Member Document
CSA	Canadian Standards Association
LCH	Licence Conditions Handbook
MDMER	<i>Metal and Diamond Mining Effluent Regulations</i>
MRO	McArthur River Operation
NSCA	<i>Nuclear Safety and Control Act</i>
PDP	Preliminary Decommissioning Plan
PDCE	Preliminary Decommissioning Cost Estimate
PDPCE	Preliminary Decommissioning Plan and Preliminary Decommissioning Cost Estimate
SMOE	Saskatchewan Ministry of Environment
UMMD	Uranium Mines and Mills Division
WDD	Wastes and Decommissioning Division

APPENDIX A: McARTHUR RIVER GENERAL SITE LAYOUT MAP



AREA = 1425 HECTARES

GENERAL NOTES

1. AS PER McARTHUR RIVER MINE SURFACE LEASE PROPERTY NO. 200007, 2010 REGIONAL.
2. AERIAL PHOTOGRAPH IS NOT TO SCALE. REFER TO SITE SURVEY FOR ACCURATE DIMENSIONS.

LOCATION: McARTHUR RIVER OPERATION	
TITLE: ENVIRONMENT SITE PLAN AERIAL 2010 SURFACE LEASE	
SHEET NO.: D	SCALE: NTS
DRAWING No.: MC4-31-G-011	REV: 1



NAME	DATE
DESIGNED: B. WROCHALK	12/04/07
DRAWN: B. WROCHALK	12/04/07
CHECKED: ELMER	12/04/07
P. ENG.	
DECLARED:	

DMS #	DESCRIPTION
16447	

REV.	DATE	DESCRIPTION	BY	CHK	APP	DA
2		REVISION CHANGED PICTURE TO SHOW ENTIRE LEASE AREA - ADDED SURFACE LEASE COORDINATES - UPDATED TITLE BLOCK	CB	RM	RM	RM
1		REVISION UPDATED FROM 2008 SURFACE LEASE	BC			
0		REVISION ISSUED FOR REFERENCE	EW			

APPENDIX B: BASIS FOR THE RECOMMENDATION(S)

A.1 Regulatory Basis

The regulatory basis for the CNSC staff recommendations presented in this CMD is as follows:

Nuclear Safety and Control Act

Subparagraph 24(2)(a)(b) of the *Nuclear Safety Control Act* provides that the Commission may issue, renew, suspend in whole or in part, amend, revoke or replace a licence, or authorize its transfer, on receipt of an application; (a) in the prescribed form; (b) containing the prescribed information and undertakings and accompanied by the prescribed documents.

Subsection 24(5) of the *Nuclear Safety Control Act* provides that a licence may contain any term or condition that the Commission considers necessary for the purposes of this Act, including a condition that the applicant provide a financial guarantee in a form that is acceptable the Commission.

Subsection 24(6) of the *Nuclear Safety Control Act* provides that the Commission may authorize the application of the proceeds of any financial guarantee.

General Nuclear Safety and Control Regulations

The *General Nuclear Safety and Control Regulations* requires under paragraph 3(1)(l) that a licence application contains a description of any proposed financial guarantee relating to the activity to be licensed.

Uranium Mines and Mills Regulations

The *Uranium Mines and Mills Regulations* requires under section 3(a)(viii) the proposed plan for the decommissioning of the mine or mill.

A.2 Technical Basis

Staff's recommendations to the Commission within this CMD are supported on a technical basis and comparison by the following documents:

- CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*
- CNSC Regulatory Guide G-219, *Decommissioning Planning for Licensed Activities*
- CSA Group standard N294-09, *Decommissioning of Facilities Containing Nuclear Substances*

This page was intentionally left blank.

PART TWO

The second part of this CMD provides information pertaining directly to the licence.

CURRENT LICENCE

e-Doc 4104807 (WORD)

e-Doc 4173049 (PDF)



Directorate of Nuclear Cycle
and Facilities Regulation

Our file Notre référence

2.04

**URANIUM MINE LICENCE
CAMECO CORPORATION
MCARTHUR RIVER OPERATION**

I) LICENCE NUMBER: UMOL-MINE-MCARTHUR.00/2023

II) LICENSEE: Pursuant to section 24 of the *Nuclear Safety and Control Act*, this licence is issued to:

**Cameco Corporation
2121 – 11th Street West
Saskatoon, Saskatchewan S7M 1J3**

III) LICENCE PERIOD: This licence is valid from November 1, 2013 to October 31, 2023, unless otherwise suspended, amended, revoked, replaced or transferred.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

- i) Prepare a site for, construct, operate, modify and decommission a nuclear facility (hereinafter “the facility”) for the mining of uranium ore at a site known as the McArthur River Operation in the Province of Saskatchewan as shown on the drawing referenced at Appendix A to this licence.
- ii) Mine a nuclear substance (uranium ore).
- iii) Import, possess, use, store, transfer and dispose of nuclear substances and radiation devices that are required for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices in relation to (i) and (ii).

V) EXPLANATORY NOTES:

- i) Nothing in this licence shall be construed to authorize non-compliance with any other applicable legal obligation or restriction.
- ii) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and its associated Regulations.
- iii) The UMOL-MINE-MCARTHUR.00/2023 Licence Conditions Handbook (LCH) identifies the criteria that will be used by Canadian Nuclear Safety Commission (CNSC) staff to assess the licensee's compliance with the conditions listed in this licence. The LCH also provides information regarding delegation of authority and applicable version control of documents.

VI) CONDITIONS:**1. GENERAL**

- 1.1 The licensee shall conduct the activities described in Part IV of this licence in accordance with the objective of the licensing basis.
- 1.2 Changes to the facility, its operation, or safety and control measures described in the application and the documents needed to support that application are permitted provided that the objectives of the licensing basis is met.
- 1.3 The licensee shall give written notification to the Commission of any changes made to the documents needed to support the licence application.
- 1.4 The licensee shall, in the event of any conflict or inconsistency between licence conditions or any documents referenced in the LCH, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.
- 1.5 The licensee shall implement and maintain a program for public information for the facility, including a public disclosure protocol.

2. MANAGEMENT SYSTEM

- 2.1 The licensee shall implement and maintain a management system.

- 2.2 The licensee shall ensure that every contractor working at the facility complies with the applicable conditions of this licence including those relating to the licensee's policies, programs, and procedures with respect to the protection of health, safety, and the environment, and to the maintenance of security.

3. HUMAN PERFORMANCE MANAGEMENT

- 3.1 The licensee shall implement and maintain a training program.

4. OPERATING PERFORMANCE

- 4.1 The licensee shall implement and maintain an operating program.
- 4.2 The licensee shall implement and maintain a process for reporting to the Commission or a person authorized by the Commission that includes reporting of all events required by the *Nuclear Safety and Control Act* and its Regulations.
- 4.3 The nuclear substances and radiation devices possessed by the licensee shall not exceed:
- a) The possession limit for unsealed sources; and
 - b) The maximum activity per sealed source or device;
- approved by the Commission or a person authorized by the Commission.

5. SAFETY ANALYSIS

- 5.1 The licensee shall implement and maintain a safety analysis program.

6. PHYSICAL DESIGN

- 6.1 The licensee shall implement and maintain a design program.

7. FITNESS FOR SERVICE

- 7.1 The licensee shall implement and maintain a maintenance program.

8. RADIATION PROTECTION

8.1 The licensee shall implement and maintain a radiation protection program.

9. CONVENTIONAL HEALTH AND SAFETY

9.1 The licensee shall implement and maintain an occupational health and safety program.

10. ENVIRONMENTAL PROTECTION

10.1 The licensee shall implement and maintain an environmental protection program.

10.2 The licensee shall where the effluent concentration reaches or exceeds the discharge limits in the *Metal Mining Effluent Regulations*, immediately take corrective action and investigate.

11. EMERGENCY MANAGEMENT AND FIRE PROTECTION

11.1 The licensee shall implement and maintain an emergency management and fire protection program.

12. WASTE MANAGEMENT

12.1 The licensee shall implement and maintain a waste management program.

12.2 The licensee shall maintain a preliminary decommissioning plan for the facility.

12.3 The licensee shall maintain a financial guarantee acceptable to the Commission. The financial guarantee shall be reviewed and updated every five years or if there are material changes.

13. SECURITY

13.1 The licensee shall implement and maintain a security program.

14. SAFEGUARDS AND NON-PROLIFERATION

14.1 The licensee shall implement and maintain a safeguards and non-proliferation program.

15. PACKAGING AND TRANSPORT

15.1 The licensee shall implement and maintain a packaging and transport program.

SIGNED at OTTAWA, this 29th day of October, 2013.



Michael Binder, President
on behalf of the Canadian Nuclear Safety Commission

APPENDIX A

LOCATION OF CAMECO'S OPERATION AT MCARTHUR RIVER

The location of the Cameco's Operation at McArthur River is shown on Drawing C431-G-011 (e-DOC 3876932).

PROPOSED AMENDED LICENCE

e-Doc 5543794 (WORD)

e-Doc 5634478 (PDF)



DRAFT

**URANIUM MINE LICENCE
CAMECO CORPORATION
MCARTHUR RIVER OPERATION**

I) LICENCE NUMBER: UML-MINE-MCARTHUR.01/2023

II) LICENSEE: Pursuant to section 24 of the *Nuclear Safety and Control Act*, this licence is issued to:

**Cameco Corporation
2121 – 11th Street West
Saskatoon, Saskatchewan S7M 1J3
Corporate Number 332981-0**

III) LICENCE PERIOD: This licence is valid from **August 1, 2019** to October 31, 2023, unless otherwise suspended, amended, revoked or replaced.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

- a) prepare a site for and construct, operate, modify and decommission a nuclear facility (hereinafter “the facility”) for the mining of uranium ore at a site known as the McArthur River Operation in the province of Saskatchewan as shown on the drawing referenced in appendix A to this licence;
- b) mine a nuclear substance (uranium ore);
- c) possess, transfer, import, use, store, and dispose of nuclear substances; and
- d) possess, transfer, import, use prescribed equipment that is required for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices in relation to (a) and (b).

V) EXPLANATORY NOTES:

- a) Nothing in this licence shall be construed to authorize non-compliance with any other applicable legal obligation or restriction.
- b) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and its associated Regulations.
- c) The UML-MINE-MCARTHUR.01/2023 Licence Conditions Handbook (LCH) identifies the criteria that will be used by Canadian Nuclear Safety Commission staff to assess the licensee’s compliance with the conditions listed in this licence. The LCH also provides information regarding delegation of authority and applicable version control of documents comprising compliance verification criteria.

VI) CONDITIONS:

G. GENERAL

G.1 Licensing Basis for Licensed Activities

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

- (i) the regulatory requirements set out in the applicable laws and regulations;
- (ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence;
- (iii) the safety and control measures described in the licence application and the documents needed to support that licence application;

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter “the Commission”).

G.2 Notification of Changes

The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.

G.3 Financial Guarantee

The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

G.4 Public Information and Disclosure

The licensee shall implement and maintain a public information and disclosure program.

1. *MANAGEMENT SYSTEM*

1.1 Management System

The licensee shall implement and maintain a management system.

2. *HUMAN PERFORMANCE MANAGEMENT*

2.1 Training Program

The licensee shall implement and maintain a training program.

3. *OPERATING PERFORMANCE*

3.1 Operations Program

The licensee shall implement and maintain an operating program, which includes a set of operating limits.

3.2 Reporting Requirements

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

3.3 Nuclear Substances and Radiation Devices

The licensee shall implement and maintain a program for nuclear substances and radiation devices.

4. *SAFETY ANALYSIS*

4.1 Safety Analysis Program

The licensee shall implement and maintain a safety analysis program.

5. *PHYSICAL DESIGN*

5.1 Design Program

The licensee shall implement and maintain a design program.

6. *FITNESS FOR SERVICE*

6.1 Fitness for Service Program

The licensee shall implement and maintain a fitness for service program.

7. *RADIATION PROTECTION*

7.1 Radiation Protection Program

The licensee shall implement and maintain a radiation protection program, which includes a set of action levels. When the licensee becomes aware that an action level has been reached, the licensee shall notify the Commission within 24 hours.

8. *CONVENTIONAL HEALTH AND SAFETY*

8.1 Conventional Health and Safety Program

The licensee shall implement and maintain a conventional health and safety program.

9. *ENVIRONMENTAL PROTECTION*

9.1 Environmental Protection Program

The licensee shall implement and maintain an environmental protection program, which includes a set of action levels. When the licensee becomes aware that an action level has been reached, the licensee shall notify the Commission within 24 hours.

10. EMERGENCY MANAGEMENT AND FIRE PROTECTION

10.1 Emergency Preparedness Program

The licensee shall implement and maintain an emergency preparedness program.

10.2 Fire Protection Program

The licensee shall implement and maintain a fire protection program.

11. WASTE MANAGEMENT

11.1 Waste Management Program

The licensee shall implement and maintain a waste management program.

11.2 Decommissioning Plan

The licensee shall maintain a decommissioning plan.

12. SECURITY

12.1 Security Program

The licensee shall implement and maintain a security program.

13. SAFEGUARDS AND NON-PROLIFERATION

13.1 Safeguards Program

The licensee shall implement and maintain a safeguards program.

14. PACKAGING AND TRANSPORT

14.1 Packaging and Transport Program

The licensee shall implement and maintain a packaging and transport program.

SIGNED at OTTAWA, this _____ day of _____, 2019.

Rumina Velshi, President
on behalf of the Canadian Nuclear Safety Commission

APPENDIX A

LOCATION OF CAMECO'S OPERATION AT MCARTHUR RIVER

The location of the Cameco's operation at McArthur River is shown on Drawing No. MC431-G-011 (e-Doc. 3876932).

DRAFT

CURRENT LICENCE CONDITIONS HANDBOOK

e-Doc 4104811 (WORD)

e-Doc 4145707 (PDF)



e-DOC 4104811 (Word)
e-DOC 4145707 (PDF)

LICENCE CONDITIONS HANDBOOK

MCARTHUR RIVER OPERATION URANIUM MINE LICENCE

UMOL-MINE-MCARTHUR.00/2023

Revision 2



This page was intentionally left blank.

Licence Conditions Handbook
McArthur River Operation
Uranium Mine Licence
UMOL-MINE-MCARTHUR.00/2023

Effective: April 2, 2015

SIGNED at OTTAWA this 2nd day of April 2015



Jean LeClair, Director
Uranium Mines and Mills Division
Directorate of Nuclear Cycle and Facilities Regulation
CANADIAN NUCLEAR SAFETY COMMISSION

Revision History:

Effective Date	Revision	Section(s) changed	Description of the Changes	DCR e-DOC
January 23, 2014	0	N/A	Original Document	4104811(Word) 4145707(PDF)
April 24, 2014	1		Changed <i>Documents that Require Version</i> control to <i>Revision Control Documents</i> . Replaced table with bulleted list of document titles. The only place that the current version is identified is in Appendix C.1. This simplifies the change management. Changed Part 1, Section 2.4 to allow annual mining of 8.1 million kg of uranium.	4313476 (Word)
April 2, 2015	2	Part I Section 2.4, Part II Section 4.3	Changed Part 1, Section 2.4 to allow annual mining of 9.6 million kg of uranium. Changed Part 2 Section 4.3 to include new devices. Minor editorial changes.	4672646 (Word)

TABLE OF CONTENTS

PART I: INTRODUCTION	1
1 BACKGROUND	1
1.1 Objective.....	1
1.2 Delegation of Authority.....	1
2 DESCRIPTION OF THE SECTIONS IN THE UMOL	2
2.1 Section I: Licence Number.....	2
2.2 Section II: Licensee.....	2
2.3 Section III: Licence Period.....	2
2.4 Section IV: Licensed Activities.....	2
2.5 Section VI: Conditions.....	3
PART II: FRAMEWORK FOR EACH CONDITION	4
1 GENERAL	5
1.1 Licensing Basis.....	5
1.2 Changes that Meet Objective of the Licensing Basis.....	6
1.3 Changes to Supporting Documents.....	6
1.4 Resolution of Conflicts or Inconsistencies.....	7
1.5 Public Information and Disclosure.....	8
2 MANAGEMENT SYSTEM	9
2.1 Management System.....	9
2.2 Management of Contractors.....	10
3 HUMAN PERFORMANCE MANAGEMENT	11
3.1 Training Program.....	11
4 OPERATING PERFORMANCE	13
4.1 Operating Performance.....	13
4.2 Reporting to the Commission.....	16
4.3 Nuclear Substances and Radiation Devices.....	17
5 SAFETY ANALYSIS	20
5.1 Safety Analysis Program.....	20
6 PHYSICAL DESIGN	22
6.1 Design Program.....	22
7 FITNESS FOR SERVICE	24
7.1 Maintenance Program.....	24
8 RADIATION PROTECTION	26
8.1 Radiation Protection Program.....	26
9 CONVENTIONAL HEALTH AND SAFETY	27
9.1 Occupational Health and Safety Program.....	28

10 ENVIRONMENTAL PROTECTION	29
10.1 Environmental Protection Program.....	29
10.2 Reaching or Exceeding Effluent Discharge Limit.....	31
11 EMERGENCY MANAGEMENT AND FIRE PROTECTION	33
11.1 Emergency Management and Fire Protection Program	33
12 WASTE MANAGEMENT	34
12.1 Waste Management Program	34
12.2 Preliminary Decommissioning Plan	36
12.3 Financial Guarantee	36
13 SECURITY	37
13.1 Security Program	37
14 SAFEGUARDS AND NON-PROLIFERATION.....	38
14.1 Safeguards and Non-Proliferation Program	38
15 PACKAGING AND TRANSPORT	39
15.1 Packaging and Transport Program	39
16 FACILITY SPECIFIC	40
APPENDIX A CONTROL OF THE LCH.....	41
A.1 LCH Change Control Process.....	41
A.2 Review Criteria for Proposed Changes to Licensing Basis Documents.....	42
A.3 Dispute Resolution	43
A.4 Records Management	43
A.5 Distribution.....	44
A.6 Reporting to the Commission	44
APPENDIX B GLOSSARY OF TERMS	45
B.1 Acronyms	45
B.2 Definitions.....	46
APPENDIX C LICENSEE DOCUMENTS	49
C.1 Documents That Require Notification of Changes	49
C.2 Documents Describing the Objective of the Licensing Basis	49
APPENDIX D LIST OF DOCUMENTS USED AS GUIDANCE OR CRITERIA	50
D.1 Canadian Standards Association Documents Referenced in the LCH.....	50
D.2 CNSC Documents Referenced in the LCH.....	50
APPENDIX E RESOLUTION OF CONFLICTS OR INCONSISTENCIES	52

PART I: INTRODUCTION

1 BACKGROUND

1.1 Objective

This Licence Conditions Handbook (LCH) identifies criteria that will be used by Canadian Nuclear Safety Commission (CNSC) staff to assess licensee compliance with the Licence Conditions (LCs) listed in the Uranium Mine Licence (UMOL) UMOL-MINE-MCARTHUR.00/2023. It also establishes provisions for delegation of authority and conflict resolution.

To support these objectives, the LCH contains the following information:

- A description of each section of the UMOL
- Background information and compliance verification criteria for each LC
- Delegation of authority to CNSC staff where applicable
- Reference to licensee documentation with version control
- Reference to applicable Canadian Standards Association (CSA) standards or CNSC regulatory documents with version control
- LCH change control procedure

The LCH is intended for use by both the licensee and CNSC staff and should be read in conjunction with UMOL-MINE-MCARTHUR.00/2023.

1.2 Delegation of Authority

The statement “a person authorized by the Commission” in LCs or the LCH indicates that the Commission may delegate certain authority to CNSC staff. Unless otherwise specified, the delegation of authority by the Commission to act as a person authorized by the Commission (Delegated Authority) is only applied to incumbents in the following positions:

- 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

2 DESCRIPTION OF THE SECTIONS IN THE UMOL

2.1 Section I: Licence Number

The alpha numeric expression UMOL-MINE-MCARTHUR.00/2023 stems from the CNSC standard convention for identifying licences. The following table provides a description of each identifier used in the expression:

Identifier	Description
UMOL	Uranium Mine Licence
MINE	Refers to type of facility (MINE, MILL, MINEMILL)
MCARTHUR	Refers to facility name
00	Licence version number (00 = Initial licence, 01 = Amendment No. 1, etc.)
2023	Expiration year

2.2 Section II: Licensee

This section of the licence provides the name and the address of the corporate entity that holds the licence, which is referred hereinafter as the “licensee”. The licensee is:

Cameco Corporation
2121 – 11th Street West
Saskatoon, Saskatchewan, S7M 1J3

2.3 Section III: Licence Period

This section of the licence identifies the duration for which the licence is valid. The licence period for UMOL-MINE-MCARTHUR.00/2023 is from November 1, 2013 to October 31, 2023, unless otherwise suspended, amended, revoked, replaced or transferred.

2.4 Section IV: Licensed Activities

This section of the licence identifies the activities that are being licensed. The box below contains a copy of the text in the licence. The authorized activities are from the list of activities described in section 26 of the *Nuclear Safety and Control Act* (NSCA).

This licence authorizes the licensee to:

- i) Prepare a site for, construct, operate, modify and decommission a nuclear facility (hereinafter “the facility”) for the mining of uranium ore at a site known as the McArthur River Operation in the province of Saskatchewan as shown on the drawing referenced at Appendix A to this licence.**
- ii) Mine a nuclear substance (uranium ore).**
- iii) Import, possess, use, store, transfer and dispose of nuclear substances and radiation devices that are required for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices in relation to (i) and (ii).**

The authorized activities at the McArthur River Operation include:

- Operation of the underground mine, underground ore-processing facility and surface ore load-out facility
- Mining and processing ore from the facility
- Mining ore up to a maximum of 9.6 million kg of uranium per year
- Operation of the Water Treatment Plant
- Storage of clean, potentially acid generating and mineralized waste rock
- Handling and storage of hazardous materials and disposal of hazardous wastes
- Possession, storage, transfer, importation, use and disposal of nuclear substances and radiation devices

An environmental assessment carried out in 1995, and addendum in 1996, evaluated the environmental effects from the operation of the mine at an annual production rate up to 7.2 million kg of uranium. In May 2010 the Commission approved a maximum of 8.1 million kg of uranium per year, with an average annual production of 7.2 million kg of uranium. In April 2014, CNSC confirmed that annual production rates of 8.1 million kg of uranium was within the licensing basis. In April 2015 CNSC confirmed that annual production rates of 9.6 million kg of uranium was within the licensing basis.

Section V: Explanatory Notes

This section of the licence provides the following clarifications and introduces the LCH as a compliance tool.

- i) Nothing in this licence shall be construed to authorize non-compliance with any other applicable legal obligation or restriction.**
- ii) Unless otherwise provided for in this licence, words and expressions used in this licence have the same meaning as in the *Nuclear Safety and Control Act* and its associated Regulations.**
- iii) The UMOL-MINE-MCARTHUR.00/2023 Licence Conditions Handbook (LCH) identifies the criteria that will be used by Canadian Nuclear Safety Commission (CNSC) staff to assess the licensee's compliance with the conditions listed in this licence. The LCH also provides information regarding delegation of authority and applicable version control of documents.**

2.5 Section VI: Conditions

This section of the licence lists the LCs.

PART II: FRAMEWORK FOR EACH CONDITION

This section of the LCH provides additional information for each LC including information on the requirements and guidance for meeting each LC, references to licensee documents submitted to meet the requirements and the compliance verification criteria that will be used to verify that the condition is being met and measure performance.

In assessing compliance with the LCs, CNSC staff apply a risk informed approach that is focused on the facilities activities and supporting programs that can impact the safe operation of the nuclear facility, health and safety of persons, environment, security or compliance with international agreements. The frequency and depth of CNSC verification activities and any subsequent regulatory enforcement will be commensurate with the overall risk.

The information for each LC or group of conditions is organized in the following manner.

Preamble

This section contains background history and/or the regulatory context related to the LC and provides, where applicable, the related regulatory requirements contained in the NSCA and associated Regulations.

Compliance Verification Criteria

CNSC compliance verification will be limited to activities that can/may impact the safe operation of the nuclear facility, the health and safety of persons, the environment, and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

The manner of verification of the regulated activities will be commensurate with:

- The risk to the health and safety of persons
- The risk to the environment
- The risk to national security
- The effective implementation of measures of control
- International obligations to which Canada has agreed
- The past compliance record of the licensee

This section identifies the criteria or the sources from which the CNSC develops compliance verification criteria that are used to verify compliance with regulatory requirements. Applicable standards such as CSA standards, national codes and guidelines, and/or CNSC regulatory documents are identified. Where there are no published standards and regulatory documents, CNSC expectations are presented as principles. Finally, the licensee is expected to comply with the information provided in licensee produced documents that support the licence application. The key documents are referenced where applicable. Compliance verification criteria are also developed from the information contained in these key documents.

Written Notification Documents

Licence Condition 1.3 requires that the licensee must provide the CNSC with written notification of changes to key licensee documents (Written Notification Documents). This section contains the titles of Written Notification Documents that contain information related to the licence condition. The current version, effective date and e-DOCS number for the Written Notification Documents that are identified throughout the LCH are compiled in Appendix C.1.

Recommendations and Guidance

This section contains guidance on how to comply with the LC and achieve a high level of safety. It may also include recommended industry best practices to help the licensee achieve fully satisfactory performance. As such, it may refer to documents that are not within the licensing basis. The recommendations and guidance are non-mandatory and licensees may propose alternate ways to meet the LC.

1 GENERAL

1.1 Licensing Basis

Licence Condition 1.1

The licensee shall conduct the activities described in Part IV of this licence in accordance with the objective of the licensing basis.

Preamble

Licence Condition 1.1 requires that activities be conducted in accordance with the licensing basis.

As defined in CNSC Information Document INFO-0795, *Licensing Basis Objective and Definition*, the licensing basis for a nuclear facility or activity is a set of documents or requirements comprising:

- (i) The regulatory requirements set out in the applicable laws and regulations
- (ii) The conditions and safety and control measures described in the facility's licence and the documents directly referenced in that licence
- (iii) The safety and control measures described in the licence application and the documents needed to support that licence application

The "documents needed to support the licence application" contain the information which demonstrates that the applicant is qualified to carry out the licensed activity and that appropriate provisions will be implemented and maintained for the protection of the health and safety of workers, the public and the environment and to meet Canada's international obligations.

Appendix C of the LCH lists the key Cameco documents which are deemed to contain the safety and control measures that are considered to form item (iii) of the licensing basis.

Compliance Verification Criteria

Compliance verification criteria are identified throughout the LCH.

Written Notification Documents

Written Notification Documents are identified throughout the LCH.

Recommendations and Guidance

There are no recommendations or guidance.

1.2 Changes that Meet Objective of the Licensing Basis

Licence Condition 1.2

Changes to the facility, its operation, or safety and control measures described in the application and the documents needed to support that application are permitted provided that the objective of the licensing basis is met.

Preamble

Licence Condition 1.2 stipulates that the licensee may make changes to the facility, its operation or safety and control measures described in the documents needed to support the application as long it can be demonstrated that the changes meet the objective of the licensing basis.

During the course of the licensed activities, it is expected that the licensee will periodically make changes to implement improvements or to address changes in operational needs.

The objective of the licensing basis is to maintain the protection of the health, safety, and security of the public and workers, and the protection of the environment that was defined in the various safety analyses such as ecological risk assessments, human health risk assessments, and process hazard analyses that were carried out in support of the licence application.

1.3 Changes to Supporting Documents

Licence Condition 1.3

The licensee shall give written notification to the Commission of any changes made to the documents needed to support the licence application.

Preamble

Licence Condition 1.3 requires written notification of any changes to the key licensee documents listed in Appendix C.1 of the LCH. Written notification for significant changes must be made prior to implementing the changes and must include an assessment of the proposed changes or modifications, identification and assessment of potential risks and impacts and proposed mitigation measures. Written notification of minor or administrative changes may be made in batches after the changes have been implemented.

Compliance Verification Criteria

The licensee must provide the CNSC with written notification of a proposed significant change to key licensee documents before the licensee implements the change. The notification must be accompanied by sufficient information to demonstrate whether the change is within the objective of the licensing basis. Written notification of minor or administrative changes may be made in batches after the changes have been implemented.

CNSC staff will review the proposed changes to determine that they are within the objective of the licensing basis in accordance with the process described in Appendix A.

A Delegated Authority will review CNSC staff's assessment and issue the determination. CNSC staff will report on significant changes made to the LCH during the previous year in their annual report to the Commission.

CNSC staff will review the notifications of minor and administrative changes to verify that no formal review is required.

Written Notification Documents

The title, revision number, effective date and e-DOC number of the key licensee documents that require written notification of changes are listed in Appendix C.1 of the LCH. The titles of the documents that contain information related to the licence condition are listed in the *Written Notifications Documents* section following each licence condition.

Recommendations and Guidance

There are no recommendations or guidance.

1.4 Resolution of Conflicts or Inconsistencies

Licence Condition 1.4

<p>The licensee shall, in the event of any conflict or inconsistency between licence conditions or any documents referenced in the LCH, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission, for resolution.</p>
--

Preamble

In the event of any conflict or inconsistency between LCs or any documents referenced in the LCH, the licensee shall direct the conflict or inconsistency to the CNSC for resolution (see Appendix A, section A.3).

The licensee and CNSC staff will discuss any identified conflicts and inconsistencies to ensure a common understanding of CNSC expectations. The resolution of these conflicts and inconsistencies will be documented by CNSC staff and acknowledged by the licensee.

A list of resolutions made pursuant to this LC will be recorded in Appendix E of this LCH. This Appendix will list the subject of the conflict or inconsistency and will give the reference to the electronic record of the resolution.

Compliance Verification Criteria

CNSC staff will ensure through compliance activities that the licensee is complying with the resolution, as formally communicated by the CNSC. Where appropriate, changes will be incorporated into compliance verification criteria.

Written Notification Documents

There are no key licensee documents that require written notification of changes.

Recommendations and Guidance

There are no recommendations or guidance.

1.5 Public Information and Disclosure

Licence Condition 1.5

The licensee shall implement and maintain a program for public information for the facility, including a public disclosure protocol.

Preamble

The primary goal of the Public Information Program is to ensure that information related to the health and safety of persons and the environment and other issues associated with the lifecycle of the nuclear facility is effectively communicated to the public. In addition, the program shall include a commitment to and protocol for on-going, timely communications regarding emissions, effluent releases, unplanned events and other incidents and activities related to the licensed facility that may be of interest to the public.

Compliance Verification Criteria

The Public Information and Disclosure Program will be evaluated against the regulatory requirements and guidance in RD/GD 99.3 *Public Information and Disclosure*.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Public Information Program

Recommendations and Guidance

There are no recommendations or guidance.

2 MANAGEMENT SYSTEM

The Safety and Control Area “Management System” covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives and fosters a healthy safety culture.

2.1 Management System

Licence Condition 2.1

The licensee shall implement and maintain a management system.

Preamble

This LC requires that the licensee implement and maintain a management system that brings together in a planned systematic and integrated manner the processes for managing the nuclear facility, the actions necessary to satisfy the requirements set out in the NSCA, regulations made pursuant to the NSCA, the licence and the measures necessary to ensure that safety is of paramount consideration in the implementation of the management system.

Compliance Verification Criteria

The management system will be evaluated against the following principles:

- 2.1.1 Safety is the paramount consideration guiding all decisions and actions.
- 2.1.2 The business is defined, planned, and controlled. The required quality and the means of achieving it are defined.
- 2.1.3 Planning identifies and prioritizes hazards, risks, controls, legal requirements, other requirements, management system deficiencies, and opportunities for improvement.
- 2.1.4 The organization is defined and understood.
- 2.1.5 Infrastructure and resources needed to achieve health and safety objectives and targets are provided and managed.
- 2.1.6 Communication is effective.
- 2.1.7 Information is managed. The preparation and use of documents are controlled. Essential records are maintained.
- 2.1.8 Work is managed. Work activities are planned and controlled.
- 2.1.9 Potential problems are identified and resolved. Deficiencies are identified and remedied.
- 2.1.10 The supply chain process is established and controlled.

- 2.1.11 A design process is established and controlled.
- 2.1.12 Changes to accepted items, processes and practices are controlled.
- 2.1.13 The facility is operated, monitored, and maintained in accordance with documentation that is consistent with the design basis.
- 2.1.14 Assessments both self and independent are performed.
- 2.1.15 Managers at all levels regularly assess the management processes for which they are responsible.
- 2.1.16 Senior management reviews the management system at planned intervals to ensure its continuing adequacy and effectiveness. Experience is sought, shared, and used. The management system is continually improved.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Quality Management Program

Recommendations and Guidance

There are no recommendations or guidance.

2.2 Management of Contractors

Licence Condition 2.2

The licensee shall ensure that every contractor working at the facility complies with the applicable conditions of this licence including those relating to the licensee's policies, programs, and procedures with respect to the protection of health, safety, and the environment, and to the maintenance of security.

Preamble

This LC requires that the licensee retain responsibility for the protection of the health, safety, and security of the public and workers, and the protection of environment when contractors perform licensed activities.

Compliance Verification Criteria

The management of contractors shall be evaluated against the following principles:

- 2.2.1 The risks to contractors and risks to the organization from the use of contractors are evaluated to identify, assess, and eliminate or control hazards.

- 2.2.2 The duties and authorities of contractor personnel are clearly defined and documented.
- 2.2.3 When the licensee requires contractors to implement parts of the management system, the licensee is directly responsible for ensuring expectations are established, understood and achieved.
- 2.2.4 Contractors are adequately trained on relevant licensee procedures and are qualified and competent.
- 2.2.5 Qualified and competent members of the licensee’s staff maintain oversight of the contractors’ performance. The oversight program is planned, defined and the results documented.
- 2.2.6 Contractor personnel are held to the same performance standards as licensee employees.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Safety and Health Management Program
- Quality Management Program

Recommendations and Guidance

There are no recommendations or guidance.

3 HUMAN PERFORMANCE MANAGEMENT

The Safety and Control Area “Human Performance Management” covers activities that enable effective human performance through the development and implementation of processes to ensure that licensee staff members are sufficient in numbers in all relevant job areas and have the necessary knowledge, skills, and tools in place to safely carry out their duties.

3.1 Training Program

Licence Condition 3.1

The licensee shall implement and maintain a training program.

Preamble

This LC requires that the licensee implement and maintain a program to provide training to ensure that employees and contractors are trained and assessed to confirm that they have

acquired and maintained the knowledge, skills and competencies required in order to safely perform their work assignments.

Compliance Verification Criteria

The CNSC endorses a Systematic Approach to Training (SAT) as an effective method to establish and maintain training for workers. The training program will be evaluated against the following elements of SAT:

- 3.1.1 A training system is implemented and maintained to ensure that training programs are systematically defined, designed, developed, implemented, evaluated, recorded and managed.
- 3.1.2 A training system is implemented and maintained to provide a logical progression from an analysis of the training requirements and identification of the qualifications and competencies required for performing a job, to the design, development, implementation, evaluation and management of training. This includes the respective training materials, and the subsequent evaluation and continuous improvement of the training courses and training programs.
- 3.1.3 All performance requirements of a capability, job or duty are identified by conducting a job analysis to determine all of the tasks, subtasks and task elements involved.
- 3.1.4 The necessary general worker training, initial job training and continuing training requirements for workers, based on a task analysis of the knowledge, skills, abilities and attitudes required to perform the duties of their position are defined and documented.
- 3.1.5 Appropriate training is designed, developed and implemented to meet the qualification and competency requirements.
- 3.1.6 Trainers meet and maintain documented qualification and competency requirements, particularly in the areas of subject matter expertise and instructional skills.
- 3.1.7 Formal evaluations confirm and document that each trained worker is qualified and competent to perform the duties of his or her position.
- 3.1.8 The change management process identifies required training and modifications to the training programs.
- 3.1.9 Continuing training that includes updates to training programs stemming from the change management process is provided to workers.
- 3.1.10 The results of periodic training program evaluations are incorporated into training program improvements.
- 3.1.11 Workers are trained in current procedures and in relevant system and equipment configurations and are competent to perform the duties of their position.

- 3.1.12 Workers training and qualifications records are established and maintained.
- 3.1.13 Workers have a level of training related to nuclear safety including but not limited to radiation safety, on-site emergency arrangements, conventional health and safety and environmental protection corresponding to the duties of their position and employment.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Training Program

Recommendations and Guidance

Guidance on training programs is provided in CNSC Operational Document HPD-TPE-01, *Objectives and Criteria for Regulatory Evaluation of Nuclear Facility Training Programs*, Human Performance Division, Directorate of Assessment and Analysis, February 2005.

4 OPERATING PERFORMANCE

The Safety and Control Area “Operating Performance” includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

4.1 Operating Performance

Licence Condition 4.1

The licensee shall implement and maintain an operating program.

Preamble

This LC requires that the licensee implement and maintain an operating performance program for the conduct of the licensed activities including the siting, construction and operation of the nuclear facility. Construction includes the commissioning of the constructed structures, systems and components. Operation includes the care and maintenance of facilities that are temporarily shut down. Operation also includes the remediation of areas of the facility where no further activities are expected to occur.

Compliance Verification Criteria

The conduct of licensed activities must comply with operating limits identified in the Mining Facility Licensing Manual and with the requirements of the Environmental Code of Practice and the Radiation Code of Practice.

Effluent discharged from the Water Treatment Plant (WTP) must comply with the limits for final treated effluent quality as stipulated in LC 10.2.

The design, construction, operation and maintenance of ventilation systems will be assessed against CNSC Regulatory Document G-221, *A Guide to Ventilation Requirements for Uranium Mines and Mills*, June 2003.

Mining is being carried out under the Mining Operations Program and underground ore processing under the Ore Processing Program. The operation of the water treatment plant is carried out under the Waste Management Program.

Construction, commissioning and operating performance will be evaluated against the following principles:

- 4.1.1 The process for constructing structures, systems and components follows accepted construction and project management practices.
- 4.1.2 Construction activities are carried out in accordance with drawings and specifications and related work instructions.
- 4.1.3 Installation procedures and work instructions are documented, reviewed and approved.
- 4.1.4 Equipment and systems are commissioned in accordance with documentation prepared prior to commissioning.
- 4.1.5 Commissioning documentation is reviewed for conformity to the design.
- 4.1.6 Commissioning reports identify the acceptability of the commissioning results.
- 4.1.7 The turnover of structures, systems, components and documents to operations is controlled.
- 4.1.8 The mine and associated facilities are operated, monitored and maintained in accordance with documentation that is consistent with the design and licensing basis.
- 4.1.9 Operational activities are controlled through the use of and adherence to operational documents.

The planning, control and verification of work will be evaluated against the following principles:

- 4.1.10 Work activities are planned to ensure that they can be carried out safely and effectively. Hazards are assessed and controls are identified.
- 4.1.11 Job hazard assessments are completed prior to conducting non-routine or complex work activities to identify and mitigate potential hazards to worker health and safety, and to the environment to an acceptable level or As Low As Reasonably Achievable (ALARA).
- 4.1.12 Measures are established and documented to ensure that non-routine work is carried out under controlled conditions.

- 4.1.13 Work activities are identified, defined in approved plans, procedures, instructions, and/or drawings to provide an appropriate level of reference.
- 4.1.14 Work is assigned to qualified personnel.
- 4.1.15 Work is carried out according to specified requirements. Controls are implemented to ensure that work is carried out under controlled conditions. Preventative and protective measures are implemented to address identified hazards and risks.
- 4.1.16 The implementation of routine and non-routine work activities is monitored.
- 4.1.17 Management verifies that work is carried out according to specified requirements.
- 4.1.18 The management of problems will be evaluated against the following:
 - A process exists to formally identify problems
 - Problems are identified and immediately controlled, if required
 - The significance of problems is evaluated and the underlying causes determined
 - Identified problems are accepted, mitigated or resolved
 - Implementation of actions employed to resolve problems are reviewed for effectiveness

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Quality Management Program
- Environmental Protection Program
- Radiation Protection Program
- Waste Management Program
- Mining Operations Program
- Ore Processing Program

Recommendations and Guidance

There are no recommendations or guidance.

4.2 Reporting to the Commission

Licence Condition 4.2

The licensee shall implement and maintain a process for reporting to the Commission or a person authorized by the Commission that includes reporting of all events required by the *Nuclear Safety and Control Act* and its Regulations.

Preamble

This LC requires the licensee to implement and maintain a process for reporting information to the CNSC. This includes monitoring results, performance assessments and the occurrence and response to unusual events.

Compliance Verification Criteria

The McArthur River Operation is subject to requirements of other federal and provincial regulatory agencies. The licensee shall report any material violation of applicable law at the federal, provincial or municipal level that pertain to the activities authorized by this licence. A “material violation” is a violation that impacts the ability of a licensee to carry out its licensed activities in a way that takes into consideration the protection of the environment, health and safety of persons, maintenance of national security and measures required to implement international obligations to which Canada has agreed. When material violations occur the licensee is expected to report the violation by providing the CNSC with copies of the report(s) or notification(s) prepared for other governing regulatory bodies.

The licensee shall report upon becoming aware of the following events:

- That a discharge limit specified in section 10.2 of the LCH has been reached or exceeded
- That an Action Level (AL) specified in the Environmental Code of Practice has been reached
- A release of hazardous substance into the environment that was not authorized by the licence
- An AL specified in the Radiation Code of Practice has been reached

Preliminary reports of failures or events should be made via fax or e-mail within 24 hours of becoming aware of the event. Preliminary reports must describe the location and circumstances of the situation, and any action that the licensee has taken or proposes to take with respect to it. A supplementary report must be submitted within 21 days of the event.

The licensee shall submit to the CNSC on a quarterly basis, within 90 days after the end of each quarter of a calendar year, the results of:

- The Radiation Monitoring Program including quality assurance and quality control information. More frequent reporting may be requested on a case-by-case basis
- The Environmental Monitoring Program including quality assurance and quality control information. More frequent reporting may be requested on a case-by-case basis

The licensee shall issue worker radiation dose records, within 90 days after the end of each quarter of a calendar year, to:

- The worker
- The CNSC
- The National Dose Registry (NDR)

The licensee shall submit to the CNSC an annual compliance report by March 31 of each year, covering the operation for the 12-month period from January 1 to December 31 of the previous year.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Quality Management Program

Recommendations and Guidance

Guidance on information to be contained in the annual report is provided in *CNSC-Saskatchewan Harmonized Annual Reporting Requirements*, August 2010.

4.3 Nuclear Substances and Radiation Devices

Licence Condition 4.3

The nuclear substances and radiation devices possessed by the licensee shall not exceed:

- a) **The possession limit for unsealed sources; and**
- b) **The maximum activity per sealed source or device;**

approved by the Commission or a person authorized by the Commission.

Preamble

This LC places restrictions on the amount of nuclear substances and the types of radiation devices for or associated with laboratory studies, field studies, fixed gauge usage and borehole logging devices that the licensee can import, possess, use, store, transfer and dispose of.

Cameco must receive CNSC consent before acquiring amounts of nuclear substances and the types of radiation devices not included on the following tables.

Compliance Verification Criteria

The authorized possession limits for unsealed nuclear substances are:

Nuclear Substance	Maximum Total Quantity In Possession
Radium-226	355 kBq
Uranium-Natural	100 Bq

The maximum authorized quantity of nuclear substances per sealed source is:

Nuclear Substance	Maximum Quantity Per Sealed Source
Americium-241	1000 Bq
Radium-226	20 kBq
Cesium-137	370 GBq
Uranium – Natural	30 MBq
Uranium – Depleted	30 MBq
Uranium – Natural – Ore	150 MBq
Cobalt-60	0.10 MBq
Thallium-204	1 MBq
Polonium-210	370 MBq

The authorized make and model of radiation devices and the maximum quantity of nuclear substance per each device are:

Radiation Device Make and Model	Nuclear Substance	Maximum Quantity per Radiation Device
Ronan Engineering SA-1	Cesium-137	370 GBq
Tracero	Cesium-137	7.4GBq
Tracero	Cobalt-60	370 MBq

The possession limits for unsealed nuclear substances does not apply to natural uranium and its decay products that are contained in the processing and sampling streams.

There is no possession limit on the number of sealed nuclear sources or radiation devices.

The management of nuclear substances and radiation devices will be evaluated against the following criteria:

4.3.1 Full and accurate records are maintained to show:

- The acquisition of nuclear substances and radiation devices including the quantity received, the form of the substance, and the name of the vendor
- The inventory of all nuclear substances and radiation devices at the facility

- The disposition of all nuclear substances and radiation devices acquired for use or processed by the facility, including the name and address of the recipient, a copy of the recipient's licence (if applicable), the quantity of the nuclear substance, and the date of shipment
- 4.3.2 Each room, area or enclosure where more than one exemption quantity of an unsealed nuclear substance is used at a single time is classified as a basic level laboratory. The quantity of an unsealed nuclear substance used at a single time shall not exceed 5 Annual Limit of Intake (ALI).
- 4.3.3 A radioisotope safety poster approved by the Commission or a person authorized by the Commission, which corresponds to the classification of the area, room or enclosure is posted, in a readily visible location in areas, rooms or enclosures where nuclear substances are handled.
- 4.3.4 Non-fixed contamination in all basic level laboratories and associated storage areas does not exceed:
- 3 becquerels per square centimetre for all Class A radionuclides
 - 30 becquerels per square centimetre for all Class B radionuclides
 - 300 becquerels per square centimetre for all Class C radionuclides; averaged over an area not exceeding 100 square centimetres
- 4.3.5 When in storage, radioactive nuclear substances or radiation devices are accessible only to persons authorized by the licensee; the dose rate at any occupied location outside the storage area, room or enclosure resulting from the substances or devices in storage does not exceed 2.5 microSv/h and measures are in place to ensure that the dose limits in the Radiation Protection Regulations are not exceeded as a result of the substances or devices in storage.
- 4.3.6 The following conditions are met prior to removing basic level laboratories from use:
- a) Non-fixed contamination does not exceed:
 - i) 0.3 becquerels per square centimetre for all Class A radionuclides
 - ii) 3 becquerels per square centimetre for all Class B radionuclides
 - iii) 30 becquerels per square centimetre for all Class C radionuclidesaveraged over an area not exceeding 100 square centimeters.
 - b) The release of any area, room or enclosure containing fixed contamination, is approved in writing by the Commission or a person authorized by the Commission.
 - c) All nuclear substances and radiation devices have been transferred.
 - d) All radiation warning signs have been removed or defaced.

- 4.3.7 The dose rate from nuclear substances and devices in areas normally occupied by persons other than Nuclear Energy Workers does not exceed 2.5 microSv/h.
- 4.3.8 A durable and legible sign that indicates the name or job title and the telephone number of a person who can initiate the accident procedure that pertains to the radiation device and who can be contacted in case of an emergency 24 hours a day is posted, in readily visible location at the place where any radiation device is used.
- 4.3.9 Radiation devices are installed, mounted and dismantled in accordance with written procedures.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Radiation Protection Program

Recommendations and Guidance

Guidance on the management of nuclear substances and radiation devices may be found in the CNSC RD/GD-371 *Licence Application Guide Nuclear Substances and Devices*, November 2011.

5 SAFETY ANALYSIS

The Safety and Control Area “Safety Analysis” includes the systematic evaluation of the potential hazards associated with the proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

5.1 Safety Analysis Program

Licence Condition 5.1

The licensee shall implement and maintain a safety analysis program.

Preamble

This LC requires that the licensee implement and maintain a process to identify and assess hazards and risks on an ongoing basis. This would include identifying and evaluating new or unforeseen risks that were not considered at the planning and design stages and updating previous risk assessments by replacing important assumptions with performance data. The results of this process will be used to set objectives and targets and to develop preventative and protective measures.

At the planning stage of a uranium mining/milling facility or a major change in a facility, an environmental assessment (EA) may be carried out to determine whether the project is likely to result in a significant adverse effect or poses an unreasonable risk to the environment, taking into

consideration the proposed mitigation measures. The EA includes the characterization of the baseline environmental conditions, and assessment of alternative ways of carrying out the project, credible accident scenarios and an environmental risk assessment (ERA) that predicts and risk ranks the potential effects of a project on ecological and human health due to both radiological and hazardous substances.

The ERA also serves as an adaptive management tool to assess the results of the facility's monitoring program to determine whether the impact on the environment and human health is within the bounds of those predicted as a basis for licensing and to assess whether additional mitigation measures are necessary. Additional mitigation measures may be necessary to ensure adequate provision and all reasonable precautions are taken to protect the environment and human health and safety and that the facility does not pose an unreasonable risk to the environment, workers and the public. The ERA should be updated with the monitoring results, and be reviewed periodically to identify and assess any risks that might have emerged or changed, and to verify its applicability.

The environmental assessment and environmental risk assessments listed in Appendix C.2 have been carried out to predict the effects of the McArthur River Operation.

Following the EA, recognized hazard analysis and risk assessment techniques are carried out during the design of systems, components and equipment to identify hazards and risks, and to identify the necessary engineering and administrative mitigation and control measures. Safety analyses are prepared for mine development and waste management facilities. CNSC staff verifies that the licensee assesses operating performance against these hazard analyses, risk assessments and safety analyses to ensure that the facility's operation remains within the objective of the licensing basis.

Prior to implementing any significant changes or modifications, the licensee must provide the CNSC with an assessment of the proposed changes or modifications, identification and assessment of potential risks and impacts and proposed mitigation measures.

Compliance Verification Criteria

The Safety Analysis Program will be evaluated against the following principles:

- 5.1.1 A process has been implemented and maintained to identify, assess, and eliminate or control health and safety and environmental risks associated with existing and new processes or changes to work procedures, equipment, organizational structure, staffing, products, services and suppliers.
- 5.1.2 Risks to health, safety and the environment have been identified, assessed, eliminated or controlled for existing and new processes or for changes to work procedures, equipment, organizational structure, staffing, products, services and suppliers.
- 5.1.3 Appropriate methodologies are used to identify potential hazards and consider the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

5.1.4 Modeling is regularly updated using measured values to replace important assumptions and to increase the certainty of predicted long-term behaviour of contaminants.

Environmental risk assessments will be assessed against:

CSA Standard N288.6-12 *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*.

Job hazard assessments that are conducted when planning non-routine and complex work activities are discussed under Operating Performance.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Environmental Protection Program
- Waste Management Program
- Safety and Health Management Program

Recommendations and Guidance

There are no recommendations or guidance.

6 PHYSICAL DESIGN

The Safety and Control Area “Physical Design” includes activities that impact on the ability of systems, structures, and components to meet and maintain its design basis given new information arising over time, and taking changes in the external environment into account.

The design basis is the range of conditions and events taken into account in the design of structures, systems and components of a facility according to established criteria, such that the facility can withstand them without exceeding authorized limits for the planned operation of safety systems.

6.1 Design Program

Licence Condition 6.1

The licensee shall implement and maintain a design program.
--

Preamble

This LC requires that the licensee implement and maintain a design control process to ensure that design outputs (both interim and final) are reviewed, verified and validated against the design

inputs and performance requirements, and to ensure that the design inputs are selected such that safety, performance and dependability of the design item are achieved.

The licensee is encouraged to make continuous improvements to the design of facilities and equipment, as long as the changes remain within the objective of the licensing basis authorized by the Commission.

The design of mining facilities must adapt to conditions encountered as development of the mine advances. An adaptive design process must be implemented and maintained to ensure that the design meets design criteria. The mine design process must include consideration of geology, hydrogeology, rock mechanics, ventilation, hydrology and water management, waste management including waste rock classification, handling and disposal, risk assessment and the identification and implementation of mitigation measures. Climate change should be considered in the mine design.

Compliance Verification Criteria

The Design Program will be evaluated against the following principles:

- 6.1.1 The design process is planned, documented and controlled.
- 6.1.2 The design control process is defined and communicated and is understood by affected personnel.
- 6.1.3 A design authority responsible for the design control process is designated.
- 6.1.4 The design control process includes design planning, inputs, output, review, verification, validation, transfer, records and change management.
- 6.1.5 Design inputs are established and include such items as:
 - functional requirements
 - performance and operational requirements
 - environmental, health and safety and human factors considerations
 - applicable codes and standards
- 6.1.6 The design is reviewed by considering design inputs, requirements, experience with similar designs, and the results of research and testing.
- 6.1.7 Design documents are maintained so the design can be related to the design requirements and used by organizations responsible for construction, commissioning, operation, and decommissioning. The following are included in the design documents:
 - design requirements
 - inputs, assumptions, methods, modeling, test and development work, and results
 - purchasing, installation and construction requirements
 - design drawings

- characteristics of the design that need to be confirmed during commissioning
 - system or equipment operating and maintenance requirements
- 6.1.8 The facility design and status documents are accurate and accessible to facility personnel.
- 6.1.9 Operational specifications and restrictions imposed by the design, including risk analyses, are appropriately communicated to the operators and incorporated into operating programs, procedures, practices, and training.
- 6.1.10 Procedures have been implemented to ensure that design output information (document and/or data) appropriately and accurately reflect the approved design.
- 6.1.11 The facility's as-built physical configuration reflects the approved design.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Mining Operations Program
- Ore Processing Program
- Quality Management Program

Recommendations and Guidance

There are no recommendations or guidance.

7 FITNESS FOR SERVICE

The Safety and Control Area "Fitness for Service" covers activities that are carried out to ensure that the physical condition of systems, components and structures remain effective over time. This includes programs that ensure all equipment is available to perform its intended design function when called upon to do so.

7.1 Maintenance Program

Licence Condition 7.1

The licensee shall implement and maintain a maintenance program.

Preamble

This LC requires that the licensee implement and maintain a maintenance program to ensure that the operating condition of systems, equipment and devices is preserved so that they can perform

its function reliably. Accuracy is maintained by planning and carrying out periodic adjustments, calibrations, repairs and replacement.

It is expected that the licensee will conduct routine maintenance, inspection and testing to ensure that the availability, reliability and effectiveness of facilities and equipment that may impact the health, safety and protection of the environment.

Compliance Verification Criteria

The Maintenance Program will be assessed against the following principles:

- 7.1.1 Systems, equipment, and devices are maintained in good working order such that they can perform their design function.
- 7.1.2 Instruments, controls and associated indicators are maintained operational and in calibration. Method and interval of calibrations are defined, and records of calibrations are kept.
- 7.1.3 Preventative and corrective maintenance processes and systems have been implemented and are maintained.
- 7.1.4 Regular inspection and testing of critical infrastructure and equipment are carried out.
- 7.1.5 A process has been implemented to identify, plan and schedule maintenance activities.
- 7.1.6 Maintenance, testing, surveillance and inspection backlogs are monitored and minimized.
- 7.1.7 Methods are used to show the current acceptance and operating status, and to prevent the use of systems, equipment or devices that are inaccurate or not in working order.
- 7.1.8 When deviations beyond accuracy limits are found or suspected, their consequence on past results, and on present performance is evaluated.
- 7.1.9 A process exists to verify that changes to calibration, testing and maintenance requirements due to system and equipment modifications and replacements are implemented.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Maintenance Program

Recommendations and Guidance

There are no recommendations or guidance.

8 RADIATION PROTECTION

The Safety and Control Area “Radiation Protection” covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses received are monitored and controlled.

8.1 Radiation Protection Program

Licence Condition

The licensee shall implement and maintain a radiation protection program.

Preamble

The *Radiation Protection Regulations* require that the licensee implement a radiation protection program and also ascertain and record doses for each person who performs duties in connection with any activity that is authorized by the NSCA or is present at a place where that activity is carried on. This program must ensure that doses to workers do not exceed prescribed dose limits and are kept ALARA, social and economic factors being taken into account. The regulatory dose limits are explicitly provided in the *Radiation Protection Regulations*.

Compliance Verification Criteria

The Radiation Protection (RP) Program will be assessed against the following principles:

- 8.1.1 The organization and administration of RP provides effective implementation and control of RP activities. The roles, responsibilities and qualification requirements of all persons involved in the RP Program are clearly defined. All levels of management and workers are committed to RP requirements and practices within their level of responsibility. A performance review process is established to evaluate the RP Program.
- 8.1.2 Workers, supervisors, contractors, and visitors have the qualifications (knowledge, skills, experience) needed to effectively perform RP practices associated with their work. A re-qualification program is implemented to maintain these qualifications.
- 8.1.3 RP personnel and RP supervisors have the qualifications (knowledge, skills, experience) needed to effectively implement and conduct activities described in the RP Program.
- 8.1.4 Radiological conditions are monitored and sources of external and internal radiation exposures are controlled. Access and work in radiological areas are controlled so that collective and individual radiation exposures are kept ALARA.
- 8.1.5 RP instrumentation and equipment are calibrated, maintained, and used so that radiation levels are accurately determined.
- 8.1.6 The Personnel Dosimetry Program ensures that external and internal radiation doses to individuals are accurately determined and recorded.

8.1.7 Appropriate contamination control measures are implemented to control and minimize the contamination of areas, equipment and personnel.

Action Levels (ALs) are designed to alert licensees before regulatory dose limits are reached. By definition, if an AL referred to in the LCH is unexpectedly reached, a loss of control of some part of the associated RP Program may have occurred, and specific action is required, as defined in the *Radiation Protection Regulations* and the applicable Code of Practice. The licensee has identified the effective doses to individuals of 1 mSv in one week and 5 mSv in a quarter as ALs. The weekly AL is assessed against engineering monitoring data. The quarterly AL is assessed against official dosimetry results. The licensee is expected to review and, if necessary, revise the ALs specified above at least once every five years in order to ensure its effectiveness. The results of such reviews should be provided to the CNSC.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Radiation Protection Program

Recommendations and Guidance

Guidance on aspects of radiation protection is provided in the following documents:

- CNSC Regulatory Guide G-129, *Keeping Radiation Exposures and Doses “As Low As Reasonably Achievable” (ALARA)*
- CNSC Regulatory Guide G-228, *Developing and Using Action Levels*
- CNSC Regulatory Guide G-91, *Ascertaining and Recording Radiation Doses to Individuals*
- CNSC Regulatory Guide G-4, *Measuring Airborne Radon Progeny at Uranium Mines and Mills*
- CNSC Regulatory Standard S-106, *Technical and Quality Assurance Requirements for Dosimetry Services in Canada*
- CNSC Regulatory Standard S-260, *Making Changes to Dose-Related Information Filed with the NDR*

9 CONVENTIONAL HEALTH AND SAFETY

The Safety and Control Area “Conventional Health and Safety” covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

9.1 Occupational Health and Safety Program

Licence Condition 9.1

The licensee shall implement and maintain an occupational health and safety program.

Preamble

This LC requires that the licensee implement and maintain a program to manage workplace safety hazards and to protect personnel and equipment.

The regulation of non-radiological health and safety at uranium mines and mills is governed by the *Canada Labour Code Part II*, which is administered by Human Resources and Skills Development Canada (HRSDC). However, the *Saskatchewan Uranium Mines and Mills Exclusion Regulations* (SOR/2001-115) defer the regulation of occupational health and safety in Saskatchewan uranium mines and mills to the province of Saskatchewan in accordance with the requirements of *The Occupational Health and Safety Act, 1993* (Chapter O-1.1 of the Statutes of Saskatchewan, 1993) and regulations (including *The Mines Regulations, 2003* Chapter O-1.1 Reg 2).

The CNSC also has regulatory responsibilities for the oversight of the protection of the health and safety of workers. The CNSC harmonizes its oversight of conventional health and safety with the Saskatchewan Ministry of Labour Relations and Workplace Safety.

The CNSC expects uranium mines and mills to develop, implement and maintain an occupational health and safety program to promote a safe and healthy workplace for employees and minimize the incidence of occupational injuries and illnesses.

Compliance Verification Criteria

The Occupational Health and Safety Program will be assessed against the following principles:

- 9.1.1 The necessary people, materials, equipment, programs and procedures to effectively manage, control and minimize health and safety risks have been provided.
- 9.1.2 Housekeeping standards have been identified and are enforced to ensure that work areas are kept clean and organized.
- 9.1.3 Facilities, processes and procedures have been implemented to ensure the safe management of hazardous materials.
- 9.1.4 Employees and contractors actively participate in the management of conventional health and safety.
- 9.1.5 Management verifies that employees and contractors actively participate in the management of health and safety in their workplace.
- 9.1.6 Procedures have been established and are maintained to communicate information about conventional health and safety.

- 9.1.7 A process has been established and maintained to monitor, measure and record conventional health and safety performance and the effectiveness of the Occupational Health and Safety Program on a regular basis.
- 9.1.8 Routine inspections are performed by workers, supervisors, senior staff and/or safety professionals to identify any potential safety issues.
- 9.1.9 Processes and procedures are established and maintained to investigate accidents and incidents, to identify root causes, to implement corrective actions and to verify that corrective actions have been completed and will effectively prevent recurrence.
- 9.1.10 Procedures have been implemented and maintained for reporting work-related injuries, illnesses, fatalities and conventional health and safety incidents including near misses.
- 9.1.11 The causes of injuries are investigated, corrective actions implemented, and the effectiveness of corrective actions verified.
- 9.1.12 A preventative and corrective action procedure has been established and maintained to address non-conformances and inadequately controlled risks.

The selection, use and care of respirators will be evaluated against CSA Standard Z94.4-11 *Selection, Use and Care of Respirators*.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Safety and Health Management Program

Recommendations and Guidance

There are no recommendations or guidance.

10 ENVIRONMENTAL PROTECTION

The Safety and Control Area “Environmental Protection” covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

10.1 Environmental Protection Program

Licence Condition 10.1

The licensee shall implement and maintain an environmental protection program.

Preamble

This LC requires that the licensee implement and maintain a program to ensure that environmental protection is managed via an integrated set of documented activities that are designed such that environmental issues are identified, monitored, interpreted and acted upon in a manner that demonstrates “adequate precaution” to protect the environment.

The Environmental Protection Program must include an environmental monitoring program that monitors all releases of nuclear and hazardous substances to the environment and characterizes and monitors the quality of the environment associated with a licensed facility. The overall objective of the environmental monitoring program (EMP) is to measure the effects of a proposed licensed activity on the receiving environment with respect to the concentrations and quantities of nuclear and hazardous substances in the environment (abiotic and biotic) and/or measurable changes in biological processes. A site-specific ERA shall be used to design the Monitoring Program such that the EMP can be used to determine whether measurable effects are acceptable.

Compliance Verification Criteria

The Environmental Protection Program will be assessed against:

- 10.1.1 CNSC Regulatory Policy P-223 *Protection of the Environment*.
- 10.1.2 CNSC Regulatory Document 2.9.1 *Environmental Protection: Environmental Protection Policies, Programs and Procedures*.
- 10.1.3 CSA Standard N288.4 *Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*.
- 10.1.4 CSA Standard N288.5 *Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills*.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Environmental Protection Program
- Waste Management Program

Recommendations and Guidance

Guidance on environmental protection programs is provided CAN/CSA-ISO 14001:04 *Environmental Management Systems – Requirements with Guidance for Use*.

10.2 Reaching or Exceeding Effluent Discharge Limit

Licence Condition 10.2

The licensee shall where the effluent concentration reaches or exceeds the discharge limits in the *Metal Mining Effluent Regulations*, immediately take corrective action and investigate.

Preamble

This LC requires the licensee to investigate and take corrective action if measured parameters in the final treated effluent exceed the authorized effluent discharge limits.

Compliance Verification Criteria

AUTHORIZED EFFLUENT DISCHARGE LIMITS

Deleterious Substance ^{1,2}	Maximum Authorized Monthly Mean Concentration ³	Maximum Authorized Concentration in a Composite Sample ³	Maximum Authorized Concentration in a Grab Sample ³
Arsenic (mg/L)	0.50	0.75	1.00
Copper (mg/L)	0.30	0.45	0.60
Lead (mg/L)	0.20	0.30	0.40
Nickel (mg/L)	0.50	0.75	1.00
Zinc (mg/L)	0.50	0.75	1.00
Total Suspended Solids (mg/L)	15.00	22.50	30.00
Radium-226 (Bq/L)	0.37	0.74	1.11
Acid balance (as H ₃ O ⁺) reported as pH	In a range of 6.0 to 9.5		
Acutely Lethal Effluent ⁴	0%		

Notes:

1. Definition of Units: mg/L = milligrams per litre
Bq/L = Becquerels per litre
2. All concentrations and activities are total values.
3. a) “Monthly Mean Concentration” means the average value of the concentrations in composite or grab samples collected over a calendar month, in accordance with the *Metal Mining Effluent Regulations* (MMER).

- b) “Composite Sample” means:
- i) a quantity of undiluted effluent consisting of a minimum of three equal volumes of effluent, or three volumes proportionate to flow, that has been collected at approximately equal time intervals over a sampling period of not less than 7 hours, and not more than 24 hours, or
 - ii) a quantity of undiluted effluent collected continually at an equal rate, or at a rate proportionate to flow, over a sampling period of not less than 7 hours, and not more than 24 hours.
- c) “Grab Sample” means a quantity of undiluted effluent collected at any given time.
4. “Acutely Lethal Effluent” means an effluent at 100% concentration that kills more than 50% of the rainbow trout subjected to it over a 96-hour period when tested in accordance with the acute lethality test.

Action Levels (ALs) are designed to alert licensees before regulatory limits are reached. By definition, if an AL referred to in the LCH is unexpectedly reached, a loss of control of some part of the associated Environmental Protection Program may have occurred, and specific action is required, as defined in the *Uranium Mines and Mills Regulations* and the applicable Environmental Code of Practice (ECOP). Administrative and AL for effluent are defined in McArthur River’s ECOP and stated below. If the average of 10 effluent treatment ponds exceeds an administrative level concentration, then an AL has been reached. Reporting requirement regarding exceedances of action level is described in LC 4.2.

Parameter	Administrative Level Composite Sample
Total Suspended Solids	15.0 mg/L
Molybdenum	1.0 mg/L
Radium-226	0.30 Bq/L
pH	≤ 6.5 or ≥ 8.5

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Quality Management Program
- Environmental Protection Program

Recommendations and Guidance

There are no recommendations or guidance.

11 EMERGENCY MANAGEMENT AND FIRE PROTECTION

The Safety and Control Area “Emergency Management and Fire Protection” covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. It also includes any results of exercise participation.

11.1 Emergency Management and Fire Protection Program

Licence Condition 11.1

The licensee shall implement and maintain an emergency management and fire protection program.

Preamble

This LC requires that the licensee implement and maintain an emergency management and fire protection program to prepare for and respond to emergency events, including fires, initiating at or impacting the licensed site, and for dealing with both the on-site and off-site effects of such emergencies.

The licensee is required to have documented emergency preparedness plans and emergency response procedures that take into account accident scenarios that could have adverse impacts on the environment and the health and safety of on-site staff and the public. Adequate resources, equipment, training, testing are required to ensure that individuals and organizational units are prepared and have the resources to effectively respond to and deal with emergencies. The program must demonstrate that the emergency management and fire protection activities are planned, coordinated, controlled and integrated to achieve the safety objectives.

Compliance Verification Criteria

The Emergency Management and Fire Protection Program will be assessed against the following principles:

- 11.1.1 Potential emergency situations are identified.
- 11.1.2 Pre-incident plans for response to emergencies are developed and are maintained.
- 11.1.3 Resources, including facilities and equipment required to respond to emergencies are identified and maintained.
- 11.1.4 Emergency communication protocols are established and understood.
- 11.1.5 Organization and responsibilities are identified.
- 11.1.6 Workers are trained to fulfill duties and responsibilities with respect to emergency management and fire plans and procedures.
- 11.1.7 Procedures are implemented and maintained to prevent, prepare for, and respond to emergencies.

11.1.8 Response plans are periodically tested.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Emergency Preparedness and Response Program
- Fire Protection Program

Recommendations and Guidance

Guidance on elements that should be included in the Emergency Management and Fire Protection Program is provided in the following documents:

- CNSC Regulatory Guide G-225, *Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills*, August 2001
- CNSC Regulatory Documents RD-353, *Testing the Implementation of Emergency Measures*, October 2008

12 WASTE MANAGEMENT

The Safety and Control Area “Waste Management” covers internal waste-related programs which form part of the facility’s operations up to the point where the waste is removed from the facility. It also covers the planning for decommissioning.

12.1 Waste Management Program

Licence Condition 12.1

The licensee shall implement and maintain a waste management program.
--

Preamble

This LC requires that the licensee implement a program to collect, treat, process, store, transport or dispose of the wastes produced by the licensed activities at the McArthur River Operation.

Waste management facilities at the McArthur River Operation include:

- Storage areas for mineralized and potentially acid-generating waste rock
- Clean waste rock and overburden piles
- Contaminated industrial waste storage
- Storage and recycling facilities for hazardous wastes
- Landfill for uncontaminated industrial and domestic waste
- Domestic sewage treatment

Compliance Verification Criteria

The Waste Management Program will be assessed against the following principles:

- 12.1.1 A radioactive waste management program is implemented to control and minimize the volume of radioactive waste.
- 12.1.2 The volume of waste is minimized by applying the “reduce, reuse, recycle and recover” principle.
- 12.1.3 Work, including selecting and purchasing environmentally preferable material and equipment, is carried out in a manner that minimizes waste and prevents pollution.
- 12.1.4 Waste is stored or disposed of in the appropriate manner.
- 12.1.5 Wastes are managed in a manner that does not compromise reclamation or decommissioning plans.
- 12.1.6 Management verifies that employees and contractors comply with waste management practices.
- 12.1.7 The effectiveness of waste management practices is monitored, measured and recorded on a regular basis.
- 12.1.8 Routine inspections are performed to identify any potential waste management issues and to verify the condition of containment structures and waste management facilities.
- 12.1.9 The safety of embankments/dams is inspected and reviewed.
- 12.1.10 Records are kept of the quantities and types of waste generated and the method of disposal or management.
- 12.1.11 Wastes are managed to control the present and future releases of contaminants to the environment.
- 12.1.12 Surface water is managed to prevent or minimize the volume that is contaminated.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Waste Management Program

Recommendations and Guidance

Guidance on elements that should be included in the Waste Management Program is provided in the following documents:

- CNSC Policy P-290, *Managing Radioactive Waste*
- CNSC Regulatory Document RD/GD-370, *Management of Uranium Mine Waste Rock and Mill Tailings*
- CNSC Guidance Document GD-320, *Assessing the Long Term Safety of Radioactive Waste Management*
- Canadian Dam Association, *Canadian Dam Safety Guidelines*

12.2 Preliminary Decommissioning Plan

Licence Condition 12.2

The licensee shall maintain a preliminary decommissioning plan for the facility.

12.3 Financial Guarantee

Licence Condition 12.3

The licensee shall maintain a financial guarantee acceptable to the Commission. The financial guarantee shall be reviewed and updated every five years or if there are material changes.

Preamble

These LCs require that the licensee maintain a Preliminary Decommissioning Plan (PDP) and financial guarantee which is sufficient to pay for the implementation of the PDP.

A PDP provides an overview of the proposed decommissioning approach that is sufficiently detailed to assure that the proposed approach is, in the light of existing knowledge, technically and financially feasible and appropriate in the interests of health, safety, security and the protection of the environment. The PDP defines areas to be decommissioned and the general structure and sequence of the principle work packages. The PDP forms the basis for establishing and maintaining a financial arrangement (financial guarantee) that will assure adequate funding of the decommissioning plan.

The latest revision of the PDP and estimation of the cost of decommissioning were finalized in *Preliminary Decommissioning Plan 2013*, July 2013.

Letters of credit payable to the Saskatchewan Ministry of Environment for C\$48.4 million are sufficient to fund the estimated cost of implementing the PDP.

Compliance Verification Criteria

It is expected that the PDP will be revised as material changes to the facility occur. A material change includes changes to the facilities, equipment or processes that may affect the cost of

decommissioning. When the PDP is revised the cost of decommissioning must be reviewed. At a minimum the PDP and the value of the financial guarantee must be reassessed every five years.

Revisions of the PDP will be assessed against:

- CSA Standard N294-09: *Decommissioning of Facilities Containing Nuclear Substances*
- CNSC Regulatory Guide G-219, *Decommissioning Planning for Licensed Activities*

Proposed changes to the financial guarantee will be assessed against:

- CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*, June 2000

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Preliminary Decommissioning Plan/Cost Estimate

Recommendations and Guidance

There are no recommendations or guidance.

13 SECURITY

The Safety and Control Area “Security” covers the programs required to implement and support the security requirements stipulated in the regulations, in its licence, or in expectations for its facility or activity.

13.1 Security Program

Licence Condition 13.1

The licensee shall implement and maintain a security program.

Preamble

This LC requires that the licensee implement and maintain security measures to prevent the loss of nuclear substances and prevent acts of sabotage at the facility.

Compliance Verification Criteria

The Security Program will be assessed against the following principles:

- 13.1.1 The Security Program addresses the risks identified in an industrial security threat and risk assessment.

- 13.1.2 Measures are implemented and maintained to prevent the loss of nuclear substances or prevent acts of sabotage at the facility.
- 13.1.3 Measures are taken to prevent unauthorized access to the mining facility and to areas within the facility where nuclear substances are stored.
- 13.1.4 The industrial security threat and risk assessment is periodically reviewed and updated.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Security Program

Recommendations and Guidance

There are no recommendations or guidance.

14 SAFEGUARDS AND NON-PROLIFERATION

The Safety and Control Area “Safeguards and Non-Proliferation” covers the programs required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) Safeguards Agreement.

14.1 Safeguards and Non-Proliferation Program

Licence Condition 14.1

The licensee shall implement and maintain a safeguards and non-proliferation program.

Preamble

This LC requires that the licensee implement a safeguards and non-proliferation program to report on the transfer of nuclear material from the facility, provide the required information on its operations for Canada’s annual nuclear fuel cycle declaration to the IAEA and to ensure that IAEA inspectors are granted prompt access to the facility.

Compliance Verification Criteria

The Safeguards and Non-Proliferation Program will be assessed against CNSC Regulatory Document RD-336, *Accounting and Reporting of Nuclear Material*, and the following principles:

- 14.1.1 Reasonable services and assistance are provided to the IAEA to enable the IAEA to carry out its duties and functions.

- 14.1.2 Prompt access to all locations at the facility is granted to the IAEA at all reasonable times where such access is required for the purposes of carrying on an activity pursuant to a safeguards agreement. Health and safety services and escorts are provided as required in order to facilitate activities.
- 14.1.3 Records that must be kept or any reports that are required to be made under a safeguards agreement are disclosed to the CNSC and the IAEA.
- 14.1.4 Reasonable assistance is provided to the IAEA to enable sampling and removal or shipment of samples.
- 14.1.5 Reasonable assistance is provided to the IAEA to enable measurements, tests and removal or shipment of equipment.
- 14.1.6 Measures are implemented to prevent damage to, or the theft, loss or sabotage of samples collected pursuant to a safeguards agreement or the illegal use, possession or removal of such samples.
- 14.1.7 Reports and information, that is required to facilitate Canada's compliance with any applicable safeguards agreement, is provided to the Commission.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Security Program

Recommendations and Guidance

There are no recommendations or guidance.

15 PACKAGING AND TRANSPORT

The Safety and Control Area "Packaging and Transport" covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

15.1 Packaging and Transport Program

Licence Condition 15.1

The licensee shall implement and maintain a packaging and transport program.

Preamble

Transport of nuclear substances is subject to the *Transport of Dangerous Goods Regulations* and the *Packaging and the Transport of Nuclear Substances Regulations*.

Cameco packages and ships uranium ore slurry. The slurry containers must meet the regulatory requirements for industrial packages (IP-2) as defined in the *Packaging and Transport of Nuclear Substances Regulations*. In addition, small amounts of nuclear substances and radiation devices, radioactive samples and contaminated equipment are received, packaged and shipped to and from site.

This LC requires the licensee to implement and maintain a transport and packaging program for nuclear substances which include the necessary procedures, materials and equipment to:

- Safely receive and unload packages
- Use, inspect and maintain packaging and packages
- Prepare, consign, handle and load packages

Compliance Verification Criteria

The adequacy of the Packaging and Transport Program will be assessed against the following principles:

- 15.1.1 All radioactive materials are transported in accordance with applicable regulations and procedures.
- 15.1.2 Procedures describe requirements for the choice of appropriate packages, preparation of transport documentation, packaging, storage and shipment of nuclear substances.

Written Notification Documents

Written notification of changes to the following key licensee documents is required:

- Mining Facility Licensing Manual
- Transportation Program

Recommendations and Guidance

There are no recommendations or guidance.

16 FACILITY SPECIFIC

There are no facility specific licence conditions.

APPENDIX A CONTROL OF THE LCH

This appendix describes the administrative processes used to control the LCH, including LCH change control procedure, change review criteria, dispute resolution, records management and reporting to the Commission.

A.1 LCH Change Control Process

Only those authorized in Part I, section 1.2 of this LCH have the authority to make changes to the LCH.

A change control process is applied to the LCH to ensure that:

- Preparation and use of the LCH are properly controlled
- All referenced documents are correctly identified and maintained
- Changes are conducted in accordance with CNSC Regulatory Policy P-299, *Regulatory Fundamentals*
- Procedures for modifying the LCH are followed

A request to change this LCH can be initiated by either CNSC staff or the licensee. The licensee will be consulted on any changes to the LCH that are proposed by CNSC staff.

Those incumbents identified in Part I, section 1.2 may only consent to the requested change once they have determined that the proposed change will not change the objective of the licensing basis.

The following are examples of proposed changes that require a change to the LCH or a document referenced in the LCH:

- Changes to the design and/or operation of facilities, processes and equipment
- Processing of uranium ore from a different source
- Clarification of the compliance verification criteria text to achieve a common understanding between the licensee and CNSC staff
- Changes to the codes, standards and regulatory documents which are identified as compliance verification criteria
- Changes to recommendations and guidance such as inclusion or amendment of CNSC regulatory guidance documents or recommendations

CNSC staff will take the following steps to update the LCH:

1. The CNSC receives or initiates written notification of proposed change.
2. Initiate a change request using the *Record of CNSC Staff Review of Proposed Change*.
3. Complete a technical review of the proposed change, if required.
4. Consult the licensee. In case of disagreement on the proposed change, the dispute resolution process outlined in section A.3 will apply.

5. Obtain consent and signature from a Delegated Authority.
6. Update the LCH in accordance with the approved *Record of CNSC Staff Review of Proposed Change* and send the updated document to the parties identified on the distribution list (see section A.5).

A.2 Review Criteria for Proposed Changes to Licensing Basis Documents

The licensee must provide the CNSC with written notification of a proposed significant change to key licensee documents before the licensee implements the change. The notification must be accompanied by sufficient information to demonstrate that the change is within the objective of the licensing basis. Written notification of minor or administrative changes may be made in batches after the changes have been implemented.

The following criteria will be used by CNSC staff to determine if the proposed change is acceptable:

1. The submission includes the appropriate level and quality of information with regards to:
 - a) The description of the proposed change including:
 - A summary of the change, including the purpose or need for the change
 - A preliminary finding of whether this proposal or notification is required under the NSCA, a regulation made under the Act or the licence, or has implications under the CEAA, or whether a licence amendment or other licensing action would likely be required
 - Where applicable, the alternatives evaluated and the reasons for selection of the chosen option
 - Any changes to the inventories of nuclear substances on-site related to the proposed change
 - The construction, commissioning and operating schedule for the proposed change including hold points or progress reports for regulatory review and approval (as appropriate)
 - Expected impacts, if any, on the proposed decommissioning or closure plans
 - Results of any risk analysis or HAZOPs studies performed, and a summary of the identified hazards and the mitigation measures identified to control potential hazards
 - b) The description of the design control, operating specifications and criteria including:
 - The design basis and criteria, and performance specifications
 - The design drawings such as the general arrangement, process and instrumentation diagrams, and process flow sheets
 - The Quality Management Program for the various key stages of the change (e.g., design, construction, commissioning, etc.)

- c) The assessment of both the short and long term impacts with the mitigation measures in place on:
 - Worker’s health and safety, including potential radiological and non-radiological exposures
 - The environment
 - Security
 - Canada’s international obligations
 - d) The planned administrative controls including:
 - Changes to the organization, roles and responsibilities
 - Changes to applicable programs and procedures
 - A description of the proposed monitoring, inspection and test plans, including locations and frequency proposed to evaluate both positive and negative results
 - e) Changes to contingency plans including “full-stop measures”
 - f) Evidence that the licensee’s internal reviews and approvals have been completed, including meeting the requirements of the licensee’s change management procedure and consultation with the on-site Occupational Health and Environmental Committees, where applicable
 - g) Identification of the documents and training programs that may require revision when the proposed change is implemented
2. The effects of the proposed change or action remain within the objective of the licensing basis.
 3. Following the implementation of the change the licensee will remain in compliance with the requirements set out in the applicable Acts, Regulations, and LCs.

A.3 Dispute Resolution

In case of a dispute between the licensee and CNSC staff regarding changes to the LCH, both parties will meet to discuss the dispute and reach a decision on the path forward. The decision, including its rationale will be documented. If any party is not satisfied with the decision, the resolution process will proceed up to the Director, Director General or Executive Vice-President and Chief Regulatory Operations Officer level. If any party is still not satisfied with the decision, the issue will be brought to the attention of the Commission at a Commission meeting. The decision made by the Commission will be final.

A.4 Records Management

In order to track changes to the LCH, the document change request and accompanying documentation will be archived in records and referenced in the revision history of the LCH.

Electronic communication related to the change, such as comments from reviewers will be stored in the CNSC Information Management System.

A.5 Distribution

A copy of the updated version of the LCH will be distributed to the following parties:

- Project Officer, Uranium Mines and Mills Division
- Cameco Corporation

A.6 Reporting to the Commission

CNSC staff will report on the changes made to the LCH during the previous year in their annual report to the Commission.

APPENDIX B GLOSSARY OF TERMS

B.1 Acronyms

The following is the list of acronyms used in this document:

AL	Action Level
ALARA	As Low As Reasonably Achievable, social and economic factors taken into consideration
ALI	Annual Limit of Intake
CEAA	Canadian Environmental Assessment Act
CMD	Commission Member Document
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
DCR	Document Change Request
ECOP	Environmental Code of Practice
EP	Environmental Protection
HAZOP	Hazard and Operability Study
HRSDC	Human Resources and Skills Development Canada
LC	Licence Condition
LCH	Licence Conditions Handbook
MFLM	Mining Facility Licensing Manual
NSCA	Nuclear Safety and Control Act
PDP	Preliminary Decommissioning Plan
RP	Radiation Protection
SAT	Systematic Approach to Training
SCA	Safety and Control Area
UMOL	Uranium Mine Licence
UMMD	Uranium Mines and Mills Division

B.2 Definitions

The following are definitions for words or expressions used in this document. Unless a source is provided in parenthesis, the words or expressions have been defined for the purposes of this document.

Accept/ed/able/ance

Meets regulatory requirements, which means it is in compliance with regulatory documents or technical standards referenced in the licence.

Accepted Items

The term “accepted items” refers to systems, equipment and facilities, as well as other items required for licensed activities. Changes to these other items also need to be controlled; examples are electrical cables, relays, water treatment chemicals, ventilation filters, etc.

Classes of Nuclear Substances

The following table organizes a number of common nuclear substances, including those for which surface contamination and waste disposal limits are typically incorporated into CNSC licences, into three classes (Class A, Class B, or Class C) on the basis of common radiological characteristics.

Class	Radionuclide				
Class A	All alpha emitters and their daughter isotopes			Ag-110m	Ar-41
	C-11	Co-56	Co-60	F-18	Ga-68
	Ga-72	I-124	La-140	Mn-56	N-13
	Na-22	Na-24	Nb-98	O-15	Sb-124
	Ta-182	V-48	Y-86	Zn-65	
Class B	As-74	Au-198	Ba-133	Br-82	Co-58
	Cu-64	Fe-59	Ga-67	Gd-153	Hg-194
	Hg-203	I-131	In-111	In-113m	In-114m
	Ir-192	K-42	Kr-79	Kr-81m	Nb-95
	Pa-233	Rb-84	Rb-86	Ru-103	Sc-46
	Se-75	Sm-153	Sn-123	Sr-85	Sr-90
	Xe-127				

Class	Radionuclide				
Class C	Au-195m	C-14	Ca-45	Cd-109	Ce-141
	Ce-144	Cl-36	Co-57	Cr-51	Fe-55
	Ge-68	H-3	I-123	I-125	In-114
	Kr-85	Lu-177	Ni-63	P-32	P-33
	Re-186	Re-188	S-35	Sn-113	Sr-89
	Tc-99	Tc-99m	Tl-201	V-49	W-188
	Xe-133	Y-86	Y-90	Yb-169	

Compliance Verification Criteria

Compliance Verification Criteria are measures of conformity to the regulatory requirements. CNSC staff use these criteria to confirm that the licensee is meeting the corresponding LC.

Consent

Permission to proceed, given by the CNSC delegated authority, for situations or changes where the licensee would:

- Comply with a regulatory requirements set out in applicable laws and regulations
- Comply with a LC
- Not adversely impact the licensing basis

Design Basis

The range of conditions and events taken into account in the design of structures, systems and components of a facility according to established criteria, such that the facility can withstand them without exceeding authorized limits for the planned operation of safety systems.

Licensee-Produced Licensing Documents

Documents containing the safety and control measures described in the licence application and the documents needed to support that licence application.

Licensing Basis

The Licensing Basis for a regulated facility or activity is a set of requirements and documents comprising:

- The regulatory requirements set out in the applicable laws and regulations
- The conditions and safety and control measures described in the facility’s or activity’s licence and the documents directly referenced in that licence
- The safety and control measures described in the licence application and the documents required to support that licence application

Material Violation

A “material violation” is a violation of applicable law at the federal, provincial or municipal level that pertain to the activities authorized by this licence that impacts the ability of a licensee to carry out its licensed activities in a way that takes into consideration the protection of the environment, health and safety of persons, maintenance of national security and measures required to implement international obligations to which Canada has agreed.

Person Authorized by the Commission

For the purpose of the UMOL and LCH, it means CNSC staff fulfilling the following positions:

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

Program(s)

A documented group of planned activities, procedures, processes, standards and instructions coordinated to meet a specific purpose.

Written Notification

A physical or electronic communication between a CNSC delegated authority and a person authorized to act on behalf of the licensee.

Written Notification Prior to Implementation

The CNSC must receive the written notification for the proposed changes within a reasonable time prior to the implementation. This will allow sufficient time for CNSC staff to review the submission and determine the acceptability.

APPENDIX C LICENSEE DOCUMENTS

C.1 Documents That Require Notification of Changes

In accordance with the requirements of LC 1.3 the CNSC must be provided with written notification before significant changes may be made to the following documents:

Document Title	Revision	Effective Date	e-DOC
Mining Facility Licensing Manual	Version 7	February 2013	4082556
Mining Operations Program	Version 9	September 2013	4201636
Ore Processing Program	Version 5	February 2013	4089929
Environmental Management Program	Version 5	June 2013	4162450
Waste Management Program	Version 7	February 2013	4094026
Radiation Protection Program	Version 9	January 2015	4695594
Safety and Health Management Program	Version 5	January 2013	4067659
Security Program	Version 4	June 2013	4162447
Emergency Preparedness and Response Program	Version 8	February 2013	4094027
Quality Management Program	Version 5	April 2013	4121792
Training Development Program	Version 5	March 2013	4109448
Maintenance Program	Version 6	June 2013	4155441
Public Information Program	Version 2	April 2013	4129663
Transportation Program	Version 2	March 2013	4109497
Fire Protection Program	Version 4	January 2013	4063941
Preliminary Decommissioning Plan/Cost Estimate	Revision 3	July 2013	4186752

C.2 Documents Describing the Objective of the Licensing Basis

The objective of the licensing basis is to achieve the level of protection of the health, safety, and security of the public and workers, and the protection of the environment that were identified in environmental and human health risk assessments that were carried out in support of the licence application. These risk assessments are contained in the following documents.

Document Title	e-DOC
Cameco Corporation, Environmental Impact Statement, 1995	4140075
Cameco Corporation, Addendum to the Environmental Impact Statement, 1996	557708
Cameco Corporation, Environmental Risk Assessment, 2005	1241701
Cameco Corporation, Ecological Risk Assessment of the Effects of Discharge from Treated Water from a Rapid Inflow Event at the McArthur River Operation, 2009	3398615

APPENDIX D LIST OF DOCUMENTS USED AS GUIDANCE OR CRITERIA

D.1 Canadian Standards Association Documents Referenced in the LCH

Document	Document Title	Version	LC	e-DOC
CAN/CSA N288.6-12	Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills	2012	5.1	3974647
CAN/CSA Z94.4-11	Selection, Use and Care of Respirators	2011	9.1	N/A
CAN/CSA N288.4	Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2010	10.1	N/A
CAN/CSA N288.5	Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	2011	10.1	N/A
CAN/CSA N294.09	Decommissioning of Facilities Containing Nuclear Substances	2009	12.3	N/A

D.2 CNSC Documents Referenced in the LCH

Document	Document Title	Version	L.C.	e-DOC
INFO-0795	Licensing Basis		1.1	N/A
RD/GD-99.3	Public Information and Disclosure	March 2012	1.5	N/A
HPD-TPE-01	Objectives and Criteria for Regulatory Evaluation of Nuclear Facility Training Programs, Human Performance Division, Directorate of Assessment and Analysis	February 2005	3.1	3664038
G-221	A Guide to Ventilation Requirements for Uranium Mines and Mills	June 2003	4.1	N/A
CNSC/SK	CNSC – Saskatchewan Harmonized Annual Reporting Requirements	August 2010	4.2	3678482
RD/GD-371	Licence Application Guide Nuclear Substances and Radiation Devices.	November 2011	4.3	N/A
G-228	Developing and Using Action Levels	March 2001	8.1	N/A
G-218	Preparing Codes of Practice to Control Radiation Doses at Uranium Mines and Mills	November 2003	8.1	N/A
G-129	Keeping Radiation Exposures and Doses ALARA	October 2004	8.1	N/A
S-106	Technical and Quality Assurance Requirements for Dosimetry Services in Canada	May 2006	8.1	N/A
G-91	Ascertaining and Recording Radiation Doses to Individuals	June 2003	8.1	N/A
G-4	Measuring Airborne Radon Progeny at Uranium Mines and Mills	June 2003	8.1	N/A
P-223	Protection of the Environment	July 2004	10.1	N/A

Document	Document Title	Version	L.C.	e-DOC
RD 2.91.	Environmental Protection: Environmental Protection Policies, Programs and Procedures	September 2013	10.1	N/A
G-219	Regulatory Guide, Decommissioning Planning for Licensed Activities	June 2000	10.1	N/A
G-225	Emergency Planning at Class 1 Nuclear Facilities and Uranium Mines and Mills	2003	11.1	N/A
RD-353	Testing the Implementation of Emergency Measures	October 2008	11.1	N/A
P-290	Managing Radioactive Waste	July 2004	12.1	N/A
RD/GD-370	Management of Uranium Mine Waste Rock and Mill Tailings	March 2012	12.1	N/A
G-320	Assessing the Long Term Safety of Radioactive Waste Management	December 2006	12.1	N/A
G-206	Regulatory Guide, Financial Guarantees for the Decommissioning of Licensed Activities	June 2000	12.3	N/A
RD-336	Accounting and Reporting of Nuclear Material	January 2011	14	NA
G-314	Implementation of Radiation Protection Programs by Consignors, Carriers and Consignees of Radioactive Material	March 2004	15.1	N/A
P-299	Regulatory Fundamentals	April 2005	A	N/A

APPENDIX E RESOLUTION OF CONFLICTS OR INCONSISTENCIES

LC	Subject of Conflict or Inconsistency	e-DOC	Identifier	Approved Date

PROPOSED LICENCE CONDITIONS HANDBOOK

e-Doc 5562182 (WORD)

e-Doc 5715227 (PDF)



DRAFT

e-Doc 5562182 (Word)
e-Doc 5715227 (PDF)

LICENCE CONDITIONS HANDBOOK

LCH-MINE-MCARTHUR.03/2023

**MCARTHUR RIVER OPERATION
URANIUM MINE LICENCE**

UML-MINE-MCARTHUR.01/2023

Revision 3



This page was intentionally left blank.

**Licence Conditions Handbook
McArthur River Operation
Uranium Mine Licence
UML-MINE-MCARTHUR.01/2023**

Effective: September xx, 2019

SIGNED at OTTAWA this XX day of September 2019

**Peter Fundarek, Director
Uranium Mines and Mills Division
Directorate of Nuclear Cycle and Facilities Regulation
CANADIAN NUCLEAR SAFETY COMMISSION**

This page was intentionally left blank.

Revision History:

Effective Date	Revision	Section(s) changed	Description of the Changes	DCR e-DOC
January 23, 2014	0	N/A	Original Document	4104811(Word) 4145707(PDF)
April 24, 2014	1		Changed <i>Documents that Require Version</i> control to <i>Revision Control Documents</i> . Replaced table with bulleted list of document titles. The only place that the current version is identified is in Appendix C.1. This simplifies the change management. Changed Part 1, Section 2.4 to allow annual mining of 8.1 million kg of uranium.	4313476 (Word)
April 2, 2015	2	Part I Section 2.4, Part II Section 4.3	Changed Part 1, Section 2.4 to allow annual mining of 9.6 million kg of uranium. Changed Part 2 Section 4.3 to include new devices. Minor editorial changes.	4672646 (Word)
September XX, 2019	3	All	Licence and LCH modernization which includes new standard licence conditions and updated LCH text and format. Revised financial guarantee value.	

This page was intentionally left blank.

TABLE OF CONTENTS

PART I - INTRODUCTION	1
PART II – FRAMEWORK FOR EACH CONDITION.....	2
G. GENERAL 2	
G.1 Licensing Basis for Licensed Activities	2
G.2 Notification of Changes	5
G.3 Financial Guarantee	6
G.4 Public Information and Disclosure	8
1 MANAGEMENT SYSTEM	9
Licence Condition 1.1.....	9
2 HUMAN PERFORMANCE MANAGEMENT	10
Licence Condition 2.1	10
3 OPERATING PERFORMANCE	11
Licence Condition 3.1	11
Licence Condition 3.2.....	13
Licence Condition 3.3.....	14
4. SAFETY ANALYSIS	16
Licence Condition 4.1.....	16
5. PHYSICAL DESIGN	17
Licence Condition 5.1	17
6 FITNESS FOR SERVICE	19
Licence Condition 6.1	19
7 RADIATION PROTECTION	21
Licence Condition 7.1	21
8 CONVENTIONAL HEALTH AND SAFETY	23
Licence Condition 8.1	23
9 ENVIRONMENTAL PROTECTION.....	25
Licence Condition 9.1	25
10 EMERGENCY MANAGEMENT AND FIRE PROTECTION	27
Licence Condition 10.1	27
Licence Condition 10.2.....	28
11 WASTE MANAGEMENT	29
Licence Condition 11.1	29
Licence Condition 11.2.....	31
12. SECURITY	32
Licence Condition 12.1	32

13 SAFEGUARDS AND NON-PROLIFERATION.....	33
Licence Condition 13.1	33
14 PACKAGING AND TRANSPORT	34
Licence Condition 14.1	34
15 FACILITY SPECIFIC.....	35
APPENDIX A CHANGE CONTROL PROCESS.....	36
APPENDIX B LICENSEE DOCUMENTS THAT REQUIRE NOTIFICATION OF CHANGE.....	41
APPENDIX C LIST OF DOCUMENTS USED AS GUIDANCE OR CRITERIA.....	42

PART I - INTRODUCTION

The purpose of the Licence Conditions Handbook (LCH) is to identify and clarify the relevant parts of the licensing basis for each licence condition (LC). This will help ensure that the licensee will maintain facility operations in accordance with the licence and the intent of the licensing basis. The LCH also provides information regarding delegation of authority, document version control and conflict resolution. The LCH should be read in conjunction with the licence.

The LCH typically has three parts under each LC: the Preamble, Compliance Verification Criteria (CVC), and Guidance. The Preamble explains the regulatory context, background, and/or history related to the LC. CVC are criteria used by Canadian Nuclear Safety Commission (CNSC) staff to oversee compliance with the LC. Guidance is non-mandatory information, including direction, on how to comply with the LC.

The statement “a person authorized by the Commission” in the LCs or the LCH indicates that the Commission may delegate certain authority to CNSC staff. Unless otherwise specified, the delegation of authority by the Commission to act as a person authorized by the Commission (Delegated Officer) is only applied to incumbents in the following positions:

- 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

INTRODUCTION

PART II – FRAMEWORK FOR EACH CONDITION

G. GENERAL

G.1 Licensing Basis for Licensed Activities

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis, defined as:

- (i) the regulatory requirements set out in the applicable laws and regulations;
- (ii) the conditions and safety and control measures described in the facility's or activity's licence and the documents directly referenced in that licence;
- (iii) the safety and control measures described in the licence application and the documents needed to support that licence application;

unless otherwise approved in writing by the Canadian Nuclear Safety Commission (hereinafter “the Commission”).

Preamble

Licence condition G1 requires activities (defined in Section IV of the Licence) be conducted in accordance with the licensing basis. Information on the licensing basis, in addition to the definition provided in G1, is discussed in CNSC’s regulatory document, REGDOC-3.5.3 *Regulatory Fundamentals*.

The licensing basis, established by the Commission at the time the licence is issued, sets the boundary conditions for a regulated activity, and establishes the basis for the CNSC’s compliance program for that regulated activity. Further information on the licensing basis can be found in INFO-0795 *Licensing Basis Objective and Definition*.

Part (i) of the licensing basis includes, but is not limited to, the following:

- *Nuclear Safety and Control Act*
- *Uranium Mines and Mills Regulations*
- *Radiation Protection Regulations*
- *Packaging and Transport of Nuclear Substances Regulations, 2015*
- *Nuclear Substances and Radiation Devices Regulations*
- *Canadian Environmental Assessment Act, 2012*
- *Metal and Diamond Mining Effluent Regulations*
- Canada/International Atomic Energy Agency (IAEA) Safeguards Agreement

GENERAL

The safety and control measures mentioned under Parts (ii) and (iii) of licence condition G1 have the potential to affect the health and safety of people, the environment, security or international obligations to which Canada agrees. These measures may be found in high-level programmatic documents but might also be found in lower-level supporting documentation. Safety and control measures can also be found in licensing basis publications such as CNSC REGDOCs, CSA Group standards or licensee documentation submitted in support of a licence.

Activities at the McArthur River Operation to which CNSC staff provide oversight include:

- operation of the underground mine, underground ore-processing facility and surface ore load-out facility
- mining and processing ore from the facility
- mining ore up to a maximum of 9.6 million kilograms of uranium per year
- operation of the water treatment plant
- storage of clean, potentially acid generating and mineralized waste rock
- handling and storage of hazardous materials and disposal of hazardous wastes
- possession, storage, transfer, importation, use and disposal of nuclear substances and radiation devices

High grade ore at the McArthur River Operation is processed into slurry, packaged into a CNSC approved IP-II type container and trucked to Cameco's Key Lake uranium mill for further processing. As a result no tailings are stored at the McArthur River Operation mines site.

On xxxx, 2019, an application to increase the grade of low grade ore from 2 percent to 3 percent was approved (e-Doc# XXXXXXXX for DNCFR Approval Process). Low grade ore is trucked to Key Lake in IP-I packages and blended with the mill feed to create a consistent grade which promotes efficiencies during processing

An environmental assessment carried out in 1995 (e-Doc # 4140075) and addendum in 1996 (e-Doc # 557708) evaluated the environmental effects from the operation of the mine. In 2009, the Ecological Risk Assessment of the Effects of Discharge from Treated Water from a Rapid Inflow Event at the McArthur River Operation (e-Doc# 3398615) was published in response to the 2003 uncontrolled inflow event.

Compliance Verification Criteria

Licensing Basis Documents

Licensing basis documents are listed in Appendix B in addition to tables under the most relevant LC. All "shall" or normative statements in licensing basis publications are considered CVC unless stated otherwise. If any "should" or informative statements in licensing basis publications are also considered CVC, this is provided under the most relevant LC.

In the event of any perceived or real conflict or inconsistency between two elements of the licensing basis, the licensee shall consult CNSC staff to determine the approach to resolve the issue.

GENERAL

For operational activities that are not in accordance with the licensing basis, the licensee shall take action as soon as practicable to return to a state that is compliant with the licensing basis, taking into account the risk significance of the situation. Reporting requirements are outlined in REGDOC-3.1.2 and discussed under LC 3.2 of this LCH.

Changes to documentation or activities that result in operational activities not being in accordance with the licensing basis must be approved by the Commission prior to implementation.

Guidance

When the licensee becomes aware that a proposed change or activity might not be in accordance with the licensing basis, it should first seek direction from CNSC staff regarding the potential acceptability of this change or activity. The licensee should take into account that certain types of proposed changes might require significant lead times before CNSC staff can make recommendations and/or the Commission can properly consider them. Guidance for notifications to CNSC related to licensee changes are discussed under LC G.2.

G.2 Notification of Changes

The licensee shall give written notification of changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis.

Preamble

During the course of licensed activities it is expected that the licensee may make changes to implement improvements or to address changes in operational needs. While making these changes it is imperative the licensee remains within the bounds of the licensing basis.

Appendix B provides a list of licensee documents that require notification of change. CNSC staff track the current version of these licensee documents in a document separate from the LCH, e-Doc 5885939.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Changes to the design, operating conditions, policies, programs and methods that have the potential to be outside of the licensing basis require prior written notification to the CNSC. CNSC staff will confirm the change remains within the licensing basis and notify the licensee prior to implementation of the change by the licensee. The licensee shall allow sufficient time for the CNSC to review the change proportionate to its complexity and the importance of the safety and control measures being affected. Regular communication between the CNSC and the licensee should ensure review timelines are established prior to submission of a notification of change. It remains the responsibility of the licensee to ensure that the McArthur River Operation continues to operate within the bounds of the licensing basis.

Prior written notification shall include:

- a summary description of the change
- the rationale for the change
- expected duration (if not a permanent change)
- a summary explanation of how the licensee has concluded that the change remains in accordance with the licensing basis

Ongoing regular communication shall be maintained to support a no surprise approach between the CNSC and licensee.

Guidance

A list of criteria to determine if a change would be in accordance with the licensing basis is provided in appendix A of CNSC process document *Overview of: Assessing licensee changes to documents or operations* (e-Doc 4055483).

GENERAL

G.3 Financial Guarantee

The licensee shall maintain a financial guarantee for decommissioning that is acceptable to the Commission.

Preamble

The licensee is responsible for all costs of implementing the proposed decommissioning plan (see LC 11.2) and providing an appropriate financial guarantee that is acceptable to the Commission.

Cameco maintains a financial guarantee to cover the future decommissioning of the McArthur River Operation, and the long term management of radioactive waste generated during operation and decommissioning. The latest revision of the preliminary decommissioning plan (PDP) and estimation of the cost of decommissioning were finalized in Cameco’s *Preliminary Decommissioning Plan and Cost Estimate*, January 2018. The Commission accepted the value of Cameco’s revised financial guarantee for the decommissioning of McArthur River Operation for the amount of C\$42.1M (proposed - still to be approved by Commission), as well as the financial instruments (letters of credit) used for the financial guarantee (Source: Record of Decision, e-Doc xxxxxxxx) (still to be approved by Commission).

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CSA Group	Decommissioning of Facilities Containing Nuclear Substances*	N294-09

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 7.2)	4082556	Yes
Cameco	Preliminary Decommissioning Plan	5445509	Yes
Cameco	Preliminary Decommissioning Cost Estimate	5445509	Yes

The financial guarantee for decommissioning the McArthur River Operation shall be reviewed and revised by the licensee every five years or when requested by the Commission. A review should also be conducted following a revision of the Preliminary Decommissioning Plan or Preliminary Cost Estimate that significantly impacts the financial guarantee.

The next financial guarantee update is expected in 2023.

GENERAL

The licensee shall submit annually to the Commission a written report confirming that the financial instruments for decommissioning costs continue to meet the requirements as specified in guidance document G-206, Financial Guarantees for the Decommissioning of Licensed Activities. The licensee shall submit this report by the end of February of each year, or at any time as the Commission may request.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	Financial Guarantees for the Decommissioning of Licensed Activities	G-206
CNSC	Decommissioning Planning for Licensed Activities	G-219

G.4 Public Information and Disclosure

The licensee shall implement and maintain a public information and disclosure program.

Preamble

The public information and disclosure program ensures that information related to the health and safety of persons and the environment and other issues associated with the lifecycle of the nuclear facility is effectively communicated to the public. In addition, the program shall include a commitment to and protocol for ongoing timely communications regarding emissions, effluent releases, unplanned events and other incidents and activities related to the licensed facility that may be of interest to the public.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Public Information and Disclosure*	REGDOC-3.2.1

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.12)	4082556	Yes
Cameco	Public Information Program	5040009	Yes

Guidance

There is no guidance provided for this licence condition.

GENERAL

1 MANAGEMENT SYSTEM

Licence Condition 1.1

The licensee shall implement and maintain a management system.

Preamble

The “management system” safety and control area covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives, continuously monitors its performance against these objectives and fosters a healthy safety culture.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CSA Group	Management system requirements for nuclear facilities	N286-12
CNSC	Management System*	REGDOC-2.1.1
CNSC	Safety Culture*	REGDOC-2.1.2 (section 2)

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (except sections mentioned under other LCs)	4082556	Yes
Cameco	Quality Management Program	5040006	Yes

Guidance

Source	Document Title	Document Number
CNSC	Safety Culture	REGDOC-2.1.2 (excluding section 2)

MANAGEMENT SYSTEM

2 HUMAN PERFORMANCE MANAGEMENT

Licence Condition 2.1

The licensee shall implement and maintain a training program.

Preamble

The “human performance management” safety and control area covers activities that enable effective human performance through the development and implementation of processes that ensure a sufficient number of licensee workers are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely perform their duties.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Human Performance Management, Personnel Training, Version 2, December 2016*	REGDOC-2.2.2

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.10)	4082556	Yes
Cameco	Training Program	5040007	Yes

Guidance

There is no guidance provided for this licence condition.

HUMAN PERFORMANCE MANAGEMENT

3 OPERATING PERFORMANCE

Licence Condition 3.1

The licensee shall implement and maintain an operating program, which includes a set of operating limits.

Preamble

The “operating performance” safety and control area includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (sections 4.2 and 4.3)	4082556	Yes
Cameco	Environmental Code of Practice (Appendix B of the Environmental Protection Program – Code of Practice)	5618034	Yes
Cameco	Radiation Code of Practice (Appendix B of Radiation Protection Program – Code of Practice)	5121368	Yes

Construction, commissioning and operating performance will be evaluated against the following principles:

- 3.1.1 The process for constructing structures, systems and components follows accepted construction and project management practices.
- 3.1.2 Construction activities are carried out in accordance with the design requirements including drawings and specifications and related work instructions.
- 3.1.3 Procedures and work instructions are documented, reviewed and approved.
- 3.1.4 Operational activities are controlled through the use of and adherence to operational documents.

The planning, control and verification of work will be evaluated against the following principles:

- 3.1.5 Work activities are planned to ensure that they can be carried out safely and effectively. Hazards are assessed and controls are identified.
- 3.1.6 Job hazard assessments are completed prior to conducting non-routine or complex work activities to identify and mitigate potential hazards to worker health and safety, and to the environment to an acceptable level or as low as reasonably achievable (ALARA).

OPERATING PERFORMANCE

- 3.1.7 Measures are established and documented to assure that non-routine work is carried out under controlled conditions.
- 3.1.8 Work activities are identified, defined in approved plans, procedures, instructions, and/or drawings to provide an appropriate level of reference.
- 3.1.9 Work is assigned to qualified personnel.
- 3.1.10 Work is carried out according to specified requirements. Controls are implemented to assure that work is carried out under controlled conditions. Preventative and protective measures are implemented to address identified hazards and risks.
- 3.1.11 The implementation of routine and non-routine work activities is monitored.
- 3.1.12 Management verifies that work is carried out according to specified requirements.
- 3.1.13 The management of problems will be evaluated against the following:
 - a process exists to formally identify problems
 - problems are identified and immediately controlled, if required
 - the significance of problems is evaluated and the underlying causes determined
 - identified problems are accepted, mitigated or resolved
 - implementation of actions employed to resolve problems are reviewed for effectiveness

Guidance

There is no guidance provided for this licence condition.

Licence Condition 3.2

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

Preamble

This LC requires the licensee to implement and maintain a process for reporting information to the CNSC. This includes monitoring results, changes to facilities or approved activities, performance assessments and the occurrence of unusual events. Sections 29 and 30 of the *General Nuclear Safety and Control Regulations*, section 38 of the *Nuclear Substance Radiation Devices Regulations* and section 16 of the *Radiation Protection Regulations* provides further insight into reportable events.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills, January 2018*	REGDOC-3.1.2

* Document under review and expected to be ready for review prior to signing of the LCH

The licensee shall report effluent concentrations that reached or exceed the discharge limits in the *Metal and Diamond Mining Effluent Regulations* in addition to requirements outlined in REGDOC-3.1.2.

The licensee shall submit to the CNSC within 90 days after the end of each quarter of a calendar year, the results of the:

- radiation monitoring program
- environmental monitoring program

Results from the above monitoring programs are also to include quality assurance and quality control information. More frequent reporting may be requested on a case-by-case basis.

The licensee shall issue worker radiation dose records, within 90 days after the end of each quarter of a calendar year, to:

- the worker
- the CNSC
- the National Dose Registry (NDR)

The licensee shall submit to the CNSC an annual compliance report by March 31 of each year, covering the operation for the 12-month period from January 1 to December 31 of the previous year.

OPERATING PERFORMANCE

Guidance

Guidance Publications

Source	Document Title	CNSC e-Access Document Number
CNSC/SK	CNSC – Saskatchewan Harmonized Annual Reporting Requirements, August 2010	3678482

Licence Condition 3.3

The licensee shall implement and maintain a program for nuclear substances and radiation devices.

Preamble

Licensees must receive CNSC approval before the import, possession, use, storage, transfer, or disposal of nuclear substances and radiation devices.

The possession limits for unsealed nuclear substances does not apply to natural uranium and its decay products that are contained in the processing and sampling streams.

It is also important to note that there is no possession limit on the number of sealed nuclear sources or radiation devices.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Licence Application Guide Nuclear Substances and Devices	REGDOC-1.6.1

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Radiation Protection Program (Appendix A)	5121368	Yes

The authorized possession limits for unsealed nuclear substances are:

Nuclear Substance	Maximum Total Quantity In Possession
Radium-226	355 kBq
Uranium - Natural	100 Bq

OPERATING PERFORMANCE

The maximum authorized quantity of nuclear substances per sealed source is:

Nuclear Substance	Maximum Quantity Per Sealed Source
Americium-241	1.00 KBq
Radium-226	20 kBq
Cesium-137	0.37 MBq
Uranium – Natural	30 MBq
Uranium – Depleted	30 MBq
Uranium – Natural – Ore	150 MBq
Cobalt-60	100 kBq
Thallium-204	1 MBq
Polonium-210	370 MBq

The authorized make and model of radiation devices and the maximum quantity of nuclear substance per each device are:

Radiation Device Make and Model	Nuclear Substance	Maximum Quantity per Radiation Device
Ronan Engineering SA-1	Cesium-137	0.37 MBq
Tracero	Cesium-137	7.4 GBq
Tracero	Cobalt-60	370 MBq

The management of nuclear substances and radiation devices will be evaluated against:

- 3.3.1 A radioisotope safety poster approved by the Commission or a person authorized by the Commission, which corresponds to the classification of the area, room or enclosure is posted, in a readily visible location in areas, rooms or enclosures where these listed nuclear substances are handled.
- 3.3.2 When in storage, radioactive nuclear substances or radiation devices are accessible only to persons authorized by the licensee; the dose rate at any occupied location outside the storage area, room or enclosure resulting from the substances or devices in storage does not exceed 2.5 mSv/h and measures are in place to ensure that the dose limits in the *Radiation Protection Regulations* are not exceeded as a result of the substances or devices in storage.

Guidance

There is no guidance provided for this licence condition.

OPERATING PERFORMANCE

4. SAFETY ANALYSIS

Licence Condition 4.1

The licensee shall implement and maintain a safety analysis program.

Preamble

The “safety analysis” safety and control area includes the systematic evaluation of the potential hazards associated with the proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Operations Program (section 9)	4201636	Yes

The safety analysis program will be evaluated against the following principles:

- 4.1.1 A process has been implemented and maintained to identify, assess, and eliminate or control health and safety and environmental risks associated with existing and new processes or changes to work procedures, equipment, organizational structure, staffing, products, services and suppliers.
- 4.1.2 Risks to health, safety and the environment have been identified, assessed, eliminated or controlled for existing and new processes or for changes to work procedures, equipment, organizational structure, staffing, products, services and suppliers.
- 4.1.3 Appropriate methodologies are used to identify potential hazards and consider the effectiveness of preventative measures and strategies in reducing the effects of such hazards.
- 4.1.4 Modeling is regularly updated using measured values to replace important assumptions and to increase the certainty of predicted long-term behaviour of contaminants.

Job hazard assessments conducted when planning non-routine and complex work activities are discussed under operating performance.

Guidance

There is no guidance provided for this licence condition.

SAFETY ANALYSIS

5. PHYSICAL DESIGN

Licence Condition 5.1

The licensee shall implement and maintain a physical design program.

Preamble

The “physical design” safety and control area relates to activities that impact the ability of structures, systems and components to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.

The design basis is the range of conditions and events taken into account in the design of structures, systems and components of a facility according to established criteria, such that the facility can withstand them without exceeding authorized limits for the planned operation of safety systems.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	REGDOC-2.5.4, Design of Uranium Mines and Mills: Ventilation Systems	REGDOC-2.5.4

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 3.0, 6.1 and 6.2)	4082556	Yes
Cameco	Ore Processing Program	4089929	Yes
Cameco	Mining Operations Program (exclude section 9)	4201636	Yes

The design program will be evaluated against the following principles:

- 5.1.1 The design process is planned, documented and controlled.
- 5.1.2 The design control process is defined and communicated and is understood by affected personnel.
- 5.1.3 A design authority responsible for the design control process is designated.
- 5.1.4 The design control process includes design planning, inputs, output, review, verification, validation, transfer, records and change management.

PHYSICAL DESIGN

- 5.1.5 Design inputs are established and include such items as:
- functional requirements
 - performance and operational requirements
 - environmental, health and safety and human factors considerations
 - applicable codes and standards
- 5.1.6 The design is reviewed by considering design inputs, requirements, experience with similar designs, and the results of research and testing.
- 5.1.7 Design documents are maintained so the design can be related to the design requirements and used by organizations responsible for construction, commissioning, operation, and decommissioning. The following are included in the design documents:
- design requirements
 - inputs, assumptions, methods, modeling, test and development work, and results
 - purchasing, installation and construction requirements
 - design drawings
 - characteristics of the design that need to be confirmed during commissioning
 - system or equipment operating and maintenance requirements
- 5.1.8 The facility design and status documents are accurate and accessible to facility personnel.
- 5.1.9 Operational specifications and restrictions imposed by the design, including risk analyses, are appropriately communicated to the operators and incorporated into operating programs, procedures, practices, and training.
- 5.1.10 Procedures have been implemented to ensure that design output information (document and/or data) appropriately and accurately reflect the approved design.
- 5.1.11 The facility's as-built physical configuration reflects the approved design.

Guidance

There is no guidance provided for this licence condition.

6 FITNESS FOR SERVICE

Licence Condition 6.1

The licensee shall implement and maintain a fitness for service program.

Preamble

The “fitness for service” safety and control area covers activities that impact the physical condition of structures, systems and components to ensure that they remain effective over time. This area includes programs that ensure equipment is available to perform its intended design function when called upon to do so.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.11)	4082556	Yes
Cameco	Maintenance Program	5040008	Yes

The fitness for service program will be assessed against the following principles:

- 6.1.1 Systems, equipment, and devices are maintained in good working order such that they can perform their design function.
- 6.1.2 Instruments, controls and associated indicators are maintained operational and in calibration. Method and interval of calibrations are defined, and records of calibrations are kept.
- 6.1.3 Preventative and corrective maintenance processes and systems have been implemented and are maintained.
- 6.1.4 Regular inspection and testing of critical infrastructure and equipment are carried out.
- 6.1.5 A process has been implemented to identify, plan and schedule maintenance activities.
- 6.1.6 Maintenance, testing, surveillance and inspection backlogs are monitored and minimized.
- 6.1.7 Methods are used to show the current acceptance and operating status, and to prevent the use of systems, equipment or devices that are inaccurate, uncalibrated or not in working order.

FITNESS FOR SERVICE

- 6.1.8 When deviations beyond accuracy limits are found or suspected, their consequence on past results, and on present performance is evaluated.
- 6.1.9 A process exists to verify that changes to calibration, testing and maintenance requirements due to system and equipment modifications and replacements are implemented.

Guidance

There is no guidance provided for this licence condition.

7 RADIATION PROTECTION

Licence Condition 7.1

The licensee shall implement and maintain a radiation protection program, which includes a set of action levels. When the licensee becomes aware that an action level has been reached, the licensee shall notify the Commission within 24 hours.

Preamble

The “radiation protection” safety and control area covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. This program must ensure that contamination and radiation doses received are monitored, controlled, kept as low as reasonably achievable (ALARA), and social and economic factors are being taken into account.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Radiation Protection Program (excluding Code of Practice)	5121368	Yes
Cameco	Mining Facility Licensing Manual (section 6.6)	4082556	Yes

The radiation protection (RP) program will be assessed against the following principles:

- 7.1.1 The organization and administration of RP provides effective implementation and control of RP activities. The roles, responsibilities and qualification requirements of all persons involved in the RP program are clearly defined. All levels of management and workers are committed to RP requirements and practices within their level of responsibility. A performance review process is established to evaluate the RP program.
- 7.1.2 Workers, supervisors and contractors have the qualifications (knowledge, skills, experience) needed to effectively perform RP practices associated with their work. A requalification program is implemented to maintain this qualification.
- 7.1.3 RP personnel and RP supervisors have the qualifications (knowledge, skills, experience) needed to effectively implement and conduct the RP program.
- 7.1.4 Radiological conditions are monitored and sources of internal and external radiation exposures are controlled. Access and work in radiological areas are controlled so that collective and individual radiation exposures are kept as low as reasonably achievable in accordance with ALARA principles.

RADIATION PROTECTION

- 7.1.5 RP instrumentation and equipment are calibrated, maintained and used so that radiation levels are accurately determined. Uncalibrated equipment is removed from use.
- 7.1.6 The personal dosimetry program ensures that external and internal radiation doses to individuals are accurately determined and recorded.
- 7.1.7 Appropriate contamination control measures are implemented to control and minimize the contamination of areas, equipment and personnel.
- 7.1.8 Effective decontamination control measures are implemented to control and prevent the contamination of areas, equipment and personnel.

Action levels (ALs) are designed to alert licensees before regulatory dose limits are reached. By definition, if an AL referred to in a licence is reached, a loss of control of some part of the associated RP program may have occurred and specific action is required, as defined in the *Radiation Protection Regulations*, the licence and the applicable code of practice.

Action Level	Dose (mSv)
Weekly Action Level	1
Quarterly Action Level	5

The weekly AL is assessed against official dosimetry results or engineering monitoring data. The quarterly AL is assessed against official dosimetry results. The licensee is expected to review and, if necessary, revise the ALs specified above at least once every five years in order to validate its effectiveness. The results of such reviews should be provided to the CNSC.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	Keeping Radiation Exposures and Doses “As Low As Reasonably Achievable (ALARA)”	G-129
CNSC	Developing and Using Action Levels	G-228
CNSC	Ascertaining and Recording Radiation Doses to Individuals	G-91
CNSC	Measuring Airborne Radon Progeny at Uranium Mines and Mills	G-4
CNSC	Technical and Quality Assurance Requirements for Dosimetry Services	S-106
CNSC	Making Changes to Dose-Related Information Filed with the NDR	S-260
CNSC	Preparing Codes of Practice to Control Radiation Doses at Uranium Mines and Mills	G-218

RADIATION PROTECTION

8 CONVENTIONAL HEALTH AND SAFETY

Licence Condition 8.1

The licensee shall implement and maintain a conventional health and safety program.

Preamble

The “conventional health and safety” safety and control area covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.

The regulation of non-radiological health and safety at uranium mines and mills is governed by the *Canada Labour Code Part II*, which is administered by Human Resources and Skills Development Canada (HRSDC). However, the *Saskatchewan Uranium Mines and Mills Exclusion Regulations* (SOR/2001-115) defer the regulation of occupational health and safety in Saskatchewan uranium mines and mills to the province of Saskatchewan in accordance with the requirements of *The Mines Regulations, 2018 Part II Revised Regulations of Saskatchewan*.

The CNSC also has regulatory responsibilities for the oversight of the protection of the health and safety of workers. The CNSC harmonizes the oversight of conventional health and safety with the Saskatchewan Ministry of Labour Relations and Workplace Safety.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CSA Group	Selection, Use and Care of Respirators	294.4-18

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Notification Requirements
Cameco	Mining Facility Licensing Manual (section 6.7)	4082556	Yes
Cameco	Safety and Health Management Program	5040002	Yes

The conventional health and safety program will be assessed against the following principles:

- 8.1.1 The necessary people, materials, equipment, programs and procedures to effectively manage, control and minimize health and safety risks have been provided.
- 8.1.2 Housekeeping standards have been identified and are enforced to ensure that work areas are kept clean and organized.

CONVENTIONAL HEALTH AND SAFETY

- 8.1.3 Facilities, processes and procedures have been implemented to ensure the safe management of hazardous materials.
- 8.1.4 Employees and contractors actively participate in the management of conventional health and safety.
- 8.1.5 Management verifies that employees and contractors actively participate in the management of health and safety in their workplace.
- 8.1.6 Procedures have been established and are maintained to communicate information about conventional health and safety.
- 8.1.7 A process has been established and maintained to monitor, measure and record conventional health and safety performance and the effectiveness of the occupational health and safety program on a regular basis.
- 8.1.8 Routine inspections are performed by workers, supervisors, senior staff and/or safety professionals to identify any potential safety issues.
- 8.1.9 Processes and procedures are established and maintained to investigate accidents and incidents, to identify root causes, to implement corrective actions and to verify that corrective actions have been completed and will effectively prevent recurrence.
- 8.1.10 Procedures have been implemented and maintained for reporting work-related injuries, illnesses, fatalities and conventional health and safety incidents including near misses.
- 8.1.11 The causes of injuries are investigated, corrective actions implemented, and the effectiveness of corrective actions verified.
- 8.1.12 A preventative and corrective action procedure has been established and maintained to address non-conformances and inadequately controlled risks.

Guidance

There is no guidance provided for this licence condition.

9 ENVIRONMENTAL PROTECTION

Licence Condition 9.1

The licensee shall implement and maintain an environmental protection program, which includes a set of action levels. When the licensee becomes aware that an action level has been reached, the licensee shall notify the Commission within 24 hours.

Preamble

The “environmental protection” safety and control area covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Environmental Protection: Environmental Principles, Assessments and Protection Measures*	REGDOC-2.9.1
CSA Group	Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills	N288.4-10
CSA Group	Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills	N288.5-11
CSA Group	Environmental risk assessments at Class I nuclear facilities and uranium mines and mills	N288.6-12
CSA Group	Groundwater protection programs at Class I nuclear facilities and uranium mines and mills	N288.7-15
CSA Group	Establishing and implementing action levels for releases to the environment from nuclear facilities*	N288.8-17

* Document under review and expected to be ready for review prior to signing of the LCH

ENVIRONMENTAL PROTECTION

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.4)	4082556	Yes
Cameco	Environmental Protection Program excluding Code of Practice	5618034	Yes
Cameco	McArthur River Operation Environmental Risk Assessment, 2015	4895700	Yes
Cameco	McArthur River Operation Environmental Performance Report 2010 to 2014	4895691	No

Guidance

Guidance Publications

Source	Document Title	Document Number
CSA Group	Environmental Management Systems – Requirements with guidance for use	ISO 14001:2015

10 EMERGENCY MANAGEMENT AND FIRE PROTECTION

Licence Condition 10.1

The licensee shall implement and maintain an emergency preparedness program.

Preamble

The “emergency management and fire protection” safety and control area covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. It also includes any results of exercise participation.

Licenses are required to continually maintain and enhance their emergency management programs.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Nuclear Emergency Preparedness and Response	REGDOC-2.10.1

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.8)	4082556	Yes
Cameco	Emergency Preparedness and Response Program	5040004	Yes

Guidance

There is no guidance provided for this licence condition.

EMERGENCY MANAGEMENT AND FIRE PROTECTION

Licence Condition 10.2

The licensee shall implement and maintain a fire protection program.

Preamble

Licenses are required to implement and maintain a fire protection program (a set of planned, coordinated, controlled and documented activities) to ensure that the licensed activities do not result in an unreasonable risk to the health and safety of persons and to the environment due to fire and to ensure that the licensee is able to efficiently and effectively respond to emergency fire situations.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Nuclear Emergency Preparedness and Response	REGDOC-2.10.1

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.14)	4082556	Yes
Cameco	Fire Protection Program Manual	4063941	Yes

Guidance

Source	Document Title	Document Number
CSA Group	Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances	N393-13

EMERGENCY MANAGEMENT AND FIRE PROTECTION

11 WASTE MANAGEMENT

Licence Condition 11.1

The licensee shall implement and maintain a waste management program.

Preamble

The “waste management” safety and control area 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.

Waste management facilities at the McArthur River Operation include:

- storage areas for mineralized and potentially acid-generating waste rock
- clean waste rock and overburden piles
- contaminated industrial waste storage
- storage and recycling facilities for hazardous wastes
- landfill for uncontaminated industrial and domestic waste
- domestic sewage treatment

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Waste Management, Volume I: Oversight of Canada's Framework for Radioactive Waste Management*	REGDOC-2.11.1, (numbering to be clarified)
CNSC	Waste Management, Volume II, Management of Uranium Mine Waste Rock and Mill Tailings	REGDOC-2.11.1
CNSC	Waste Management, Volume III*	REGDOC-2.11.1, (numbering to be clarified)

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.5)	4082556	Yes
Cameco	Waste Management Program	4094026	Yes

WASTE MANAGEMENT

The waste management program will be assessed against the following principles:

- 11.1.1 The volume of waste is minimized by applying the “reduce, reuse, recycle and recover” principle.
- 11.1.2 Work is carried out in a manner that minimizes waste and prevents pollution.
- 11.1.3 Waste is stored or disposed of in the appropriate manner.
- 11.1.4 Wastes are managed in a manner that does not compromise reclamation or decommissioning plans.
- 11.1.5 Management verifies that employees and contractors comply with waste management practices.
- 11.1.6 The effectiveness of waste management practices is monitored, measured and recorded on a regular basis.
- 11.1.7 Routine inspections are performed to identify any potential waste management issues and to verify the condition of containment structures and waste management facilities.
- 11.1.8 The safety of embankments/dams is inspected and reviewed.
- 11.1.9 Records are kept of the quantities and types of waste generated and the method of disposal or management.
- 11.1.10 Wastes are managed to control the present and future releases of contaminants to the environment.
- 11.1.11 Surface water is managed to prevent or minimize the volume that is contaminated.

Guidance

Guidance Publications

Source	Document Title	Document Number
Canadian Dam Association	Canadian Dam Association, Canadian Dam Safety Guidelines, 2013	N/A
CNSC	Waste Management, Volume II: Assessing the Long Term Safety of Radioactive Waste Management	REGDOC-2.11.1

WASTE MANAGEMENT

Licence Condition 11.2

The licensee shall maintain a decommissioning plan.

Preamble

This LC requires that the licensee maintain a preliminary decommissioning strategy, referred to as a preliminary decommissioning plan (PDP).

A PDP provides an overview of the proposed decommissioning approach that is sufficiently detailed to assure that the proposed approach is, in the light of existing knowledge, technically and financially feasible, and appropriate in the interests of health, safety, security and the protection of the environment. The PDP defines areas to be decommissioned and the general structure and sequence of the principle work packages. The PDP forms the basis for establishing and maintaining a financial arrangement (financial guarantee) that will assure adequate funding of the decommissioning plan.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CSA Group	Decommissioning of Facilities Containing Nuclear Substances*	N294-09

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 7)	4082556	Yes
Cameco	Preliminary Decommissioning Plan and Cost Estimate	5445509	Yes

The PDP is to be revised at a minimum every five years or when required by the Commission; however, is to be kept current to reflect any changes in the site or nuclear facility. The McArthur River Operation PDP was last revised and submitted to the CNSC in 2018 and is next scheduled for submission to the CNSC in 2023.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	Financial Guarantees for the Decommissioning of Licensed Activities	G-206
CNSC	Decommissioning Planning for Licensed Activities	G-219

WASTE MANAGEMENT

12. SECURITY

Licence Condition 12.1

The licensee shall implement and maintain a security program.

Preamble

The “security” safety and control area 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.

Compliance Verification Criteria

Licence Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.9)	4082556	Yes
Cameco	Security Program	5040005	Yes

The security program will be assessed against the following principles:

- 12.1.1 The security program addresses the risks identified in an industrial security threat and risk assessment.
- 12.1.2 Measures are implemented and maintained to prevent the loss of nuclear substances or prevent acts of sabotage at the facility.
- 12.1.3 Measures are taken to prevent unauthorized access to the mining facility and to areas within the facility where nuclear substances are stored.
- 12.1.4 The industrial security threat and risk assessment is periodically reviewed and updated.

Guidance

Guidance Publications

Source	Document Title	Document Number
CNSC	Security of Nuclear Substances: Sealed Sources	REGDOC-2.12.3

SECURITY

13 SAFEGUARDS AND NON-PROLIFERATION

Licence Condition 13.1

The licensee shall implement and maintain a safeguards program.

Preamble

The “safeguards and non-proliferation” safety and control area covers the programs and activities required for the successful implementation of the obligations arising from the Canada/International Atomic Energy Agency (IAEA) safeguards agreements, as well as all other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*.

Compliance Verification Criteria

Licensing Basis Publications

Source	Document Title	Document Number
CNSC	Safeguards and Nuclear Material Accountancy*	REGDOC-2.13.1 (sections to be specified)

* Document under review and expected to be ready for review prior to signing of the LCH

Licensee Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Security Program	5040005	Yes

Guidance

There is no guidance provided for this licence condition.

SAFEGUARDS AND NON-PROLIFERATION

14 PACKAGING AND TRANSPORT

Licence Condition 14.1

The licensee shall implement and maintain a packaging and transport program.

Preamble

The “packaging and transport” safety and control area covers the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

Every person who transports radioactive material, or requires it to be transported, shall act in accordance with the requirements of the *Transportation of Dangerous Goods Regulations* and the *Packaging and the Transport of Nuclear Substances Regulations, 2015*.

The *Packaging and Transport of Nuclear Substances Regulations, 2015* and the *Transportation of Dangerous Goods Regulations* provides specific requirements for the design of transport packages, the packaging, marking and labeling of packages and the handling and transport of nuclear substances.

Compliance Verification Criteria

The licensee shall implement and maintain a packaging and transport program that will ensure compliance with the requirements set out in the *Transportation of Dangerous Goods Regulations* and in the *Packaging and Transport of Nuclear Substances Regulations, 2015*.

Licence Documents that Require Notification of Change

Source	Document Title	CNSC e-Access Document Number	Prior Notification Required
Cameco	Mining Facility Licensing Manual (section 6.13)	4082556	Yes
Cameco	Transportation Program	4109497	Yes

Guidance

There is no guidance provided for this licence condition.

15 FACILITY SPECIFIC

There are no facility specific licence conditions.

APPENDIX A CHANGE CONTROL PROCESS

A.1 Change Control Process

A change control process is applied to the LCH to ensure that:

- preparation and use of the LCH are properly controlled
- all referenced documents are correctly identified and maintained
- procedures for modifying the LCH are followed

A request to change this LCH can be initiated by either CNSC staff or the licensee. The licensee will be consulted on any changes to the LCH that are proposed by CNSC staff.

CNSC staff will take the following steps to update the LCH:

1. the CNSC receives or initiates written notification of proposed change
2. initiate a change request using the Change Request Form
3. complete a technical review of the proposed change, if required
4. consult the licensee and in case of disagreement on the proposed change, the dispute resolution process outlined in section A.3 will apply
5. obtain consent and signature from a Delegated Officer
6. update the LCH in accordance with the Change Request Form and send the updated document to the parties identified on the distribution list (section A.5)

Change Request Form

1. GENERAL INFORMATION			
File Plan #		e-Doc #(s) for Change Request Form	
Licensee	Licence Number	LCH #, Rev/Version	Request Date
Licensing Officer			
2. CHANGE(S) TO THE LCH			
#	Description and Purpose	Proposed Change	References
1	<initiator, nature, reason for change, e.g. administrative, change to a licensee doc, etc.>	<identify modifications, such as by track changes, highlighting, etc.>	<LC, page, section #, etc.>
2			
3. ASSESSMENT (text and/or e-Doc #s)			
#	Division/Org	Comment	Disposition
1	<division>		
	<division>		
	<licensee>		
	<division>		
2	etc.		
4. CONSENT TO MODIFY			
#	Agreed	Comment	
1			
2			
Name	Title	Signature	Date
5. LCH DOCUMENTATION AND DISTRIBUTION			
New LCH Number	LCH Effective Date	e-Doc # (include version number)	
CNSC Outgoing Notification		e-Doc #	Date Sent

APPENDIX A

A.2 Review Criteria for Proposed Changes to Licensing Basis Documents

The licensee must provide the CNSC with written notification of a proposed significant change to key licensee documents before the licensee implements the change. The notification must be accompanied by sufficient information to demonstrate that the change is within the intent of the licensing basis. Written notification of minor or administrative changes may be made in batches after the changes have been implemented.

The following criteria will be used by CNSC staff to determine if the proposed change is acceptable:

1. The submission includes the appropriate level and quality of information with regards to:
 - a) The description of the proposed change including:
 - a summary of the change, including the purpose or need for the change
 - a preliminary finding of whether this proposal or notification is required under the NSCA, a regulation made under the Act or the licence, or has implications under the CEAA, or whether a licence amendment or other licensing action would likely be required
 - where applicable, the alternatives evaluated and the reasons for selection of the chosen option
 - any changes to the inventories of nuclear substances onsite related to the proposed change
 - the construction, commissioning and operating schedule for the proposed change including hold points or progress reports for regulatory review and approval (as appropriate)
 - expected impacts, if any, on the proposed decommissioning or closure plans
 - results of any risk analysis or hazard operability studies performed, and a summary of the identified hazards and the mitigation measures identified to control potential hazards
 - b) The description of the design control, operating specifications and criteria including:
 - the design basis and criteria, and performance specifications
 - the design drawings such as the general arrangement, process and instrumentation diagrams, and process flow sheets
 - the quality management program for the various key stages of the change (e.g., design, construction, commissioning, etc.)

APPENDIX A

- c) The assessment of both the short and long term impacts with the mitigation measures in place on:
 - worker’s health and safety, including potential radiological and non-radiological exposures
 - the environment
 - security
 - Canada’s international obligations
 - d) The planned administrative controls including:
 - changes to the organization, roles and responsibilities
 - changes to applicable programs and procedures
 - a description of the proposed monitoring, inspection and test plans, including locations and frequency proposed to evaluate both positive and negative results
 - e) Changes to contingency plans including “full-stop measures”
 - f) Evidence that the licensee’s internal reviews and approvals have been completed, including meeting the requirements of the licensee’s change management procedure and consultation with the onsite occupational health and environmental committees, where applicable
 - g) Identification of the documents and training programs that may require revision when the proposed change is implemented
2. The effects of the proposed change or action remain within the licensing basis.
 3. Following the implementation of the change the licensee will remain in compliance with the requirements set out in the applicable acts, regulations, and LCs.

A.3 Dispute Resolution

In case of a dispute between the licensee and CNSC staff regarding changes to the LCH, both parties will meet to discuss the dispute and reach a decision on the path forward. The decision, including its rationale will be documented. If any party is not satisfied with the decision, the resolution process will proceed up to the Director, Director General or Executive Vice-President and Chief Regulatory Operations Officer level. If any party is still not satisfied with the decision, the issue will be brought to the attention of the Commission at a Commission meeting. The decision made by the Commission will be final.

A.4 Records Management

In order to track changes to the LCH, the document change request and accompanying documentation will be archived in records and referenced in the revision history of the LCH. Electronic communication related to the change, such as comments from reviewers will be stored in the CNSC information management system.

APPENDIX A

A.5 Distribution

A copy of the updated version of the LCH will be distributed to the following parties:

- Uranium Mines and Mills Division, CNSC
- Cameco Corporation

A.6 Reporting to the Commission

CNSC staff will report on the changes made to the LCH during the previous year in their annual report to the Commission.

DRAFT

APPENDIX A

APPENDIX B LICENSEE DOCUMENTS THAT REQUIRE NOTIFICATION OF CHANGE

Document Title	e-DOC	Notification Requirements
Mining Facility Licencing Manual	4082556	PN
McArthur River Operation Environmental Risk Assessment, 2015	4895700	PN
Preliminary Decommissioning Plan and Cost Estimate	5445509	PN
Public Information Program	5040009	PN
Quality Management Program	5040006	PN
Training Program	5040007	PN
Radiation Protection Program	5121368	PN
Mining Operations Program	4201636	PN
Ore Processing Program	4089929	PN
Maintenance Program	5040008	PN
Safety and Health Management Program	5040002	PN
Environmental Protection Program	5618034	PN
Emergency Preparedness and Response Program	5040004	PN
Fire Protection Program Manual	4063941	PN
Security Program	5040005	PN
Waste Management Program	4094026	PN
Transportation Program	4109497	PN

APPENDIX B

APPENDIX C LIST OF DOCUMENTS USED AS GUIDANCE OR CRITERIA

Document	Document Title	Document Number
Canadian Dam Association	Canadian Dam Association, Canadian Dam Safety Guidelines	N/A
CNSC	Change Control Process	19-318-07
CNSC	Measuring Airborne Radon Progeny at Uranium Mines and Mills	G-4
CNSC	Ascertaining and Recording Radiation Doses to Individuals	G-91
CNSC	Keeping Radiation Exposures and Doses "As Low As Reasonably Achievable (ALARA)"	G-129
CNSC	Financial Guarantees for the Decommissioning of Licensed Activities	G-206
CNSC	Preparing Codes of Practice to Control Radiation Doses at Uranium Mines and Mills	G-218
CNSC	Decommissioning Planning for Licensed Activities	G-219
CNSC	Developing and Using Action Levels	G-228
CNSC	Licence Application Guide Nuclear Substances and Devices	REGDOC-1.6.1
CNSC	Management System*	REGDOC-2.1.1
CNSC	Safety Culture*	REGDOC-2.1.2
CNSC	Human Performance Management, Personnel Training, Version 2, December 2016	REGDOC-2.2.2
CNSC	REGDOC-2.5.4, Design of Uranium Mines and Mills: Ventilation Systems	REGDOC-2.5.4
CNSC	Environmental Protection: Environmental Principles, Assessments and Protection Measures	REGDOC-2.9.1 version 1.1
CNSC	Nuclear Emergency Preparedness and Response	REGDOC-2.10.1
CNSC	Waste Management, Volume I: Oversight of Canada's Framework for Radioactive Waste Management	REGDOC-2.11.1 (numbering to be clarified)

APPENDIX C

Document	Document Title	Document Number
CNSC	Waste Management, Volume II: Assessing the Long Term Safety of Radioactive Waste Management*	REGDOC-2.11.1
CNSC	Waste Management, Volume III*	REGDOC-2.11.1 (numbering to be clarified)
CNSC	Security of Nuclear Substances: Sealed Sources*	REGDOC-2.12.3
CNSC	Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills, January 2018	REGDOC-3.1.2
CNSC	Public Information and Disclosure (implementation, 2013)	REGDOC-3.2.1
CNSC	Regulatory Fundamentals	REGDOC-3.5.3
CNSC	Technical and Quality Assurance Requirements for Dosimetry Services	S-106
CNSC	Making Changes to Dose-Related Information Filed with the NDR	S-260
CNSC	Objectives and Criteria for Regulatory Evaluation of Nuclear Facility Training Programs, 2013	TPED-01
CNSC/SK	CNSC – Saskatchewan Harmonized Annual Reporting Requirements, August 2010	3678482 (e-doc number)
CSA Group	Management System Requirements for Nuclear Facilities	N286-12
CSA Group	Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	N288.4-10
CSA Group	Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills	N288.5-11
CSA Group	Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills	N288.6-12
CSA Group	Groundwater Protection Programs at Class I Nuclear Facilities and Uranium Mines and Mills	N288.7-15
CSA Group	Establishing and Implementing Action Levels for Releases to the Environment From Nuclear Facilities	N288.8-17
CSA Group	Selection, Use and Care of Respirators	294.4-18

APPENDIX C

Document	Document Title	Document Number
CSA Group	Decommissioning of Facilities Containing Nuclear Substances*	N294-09
CSA Group	Fire Protection for Facilities that Process, Handle, or Store Nuclear Substances	N393-13
CSA Group	Environmental Management Systems – Requirements with guidance for use	ISO 14001:2015
CSA Group	Selection, Use and Care of Respirators	Z94.4-11 (R2016)

* Document under review and expected to be ready for review prior to signing of the LCH

DRAFT

APPENDIX C