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CMD: 21-H105

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A Licence Renewal

Un renouvellement de permis

Cameco Corporation

Cameco Corporation

**Application to Renew Licence for
Cameco Fuel Manufacturing Inc.**

**Demande de renouvellement de
permis pour Cameco Fuel
Manufacturing Inc.**

Hearing in writing based solely on
written submissions

Audience par écrit fondée uniquement
sur des mémoires

Scheduled for:
December 2021

Prévue pour :
Décembre 2021

Submitted by:
CNSC Staff

Soumis par :
Le personnel de la CCSN

Summary

This Commission member document (CMD) presents information about the following matters of regulatory interest with respect to Cameco Fuel Manufacturing Inc. (CFM):

- CNSC staff's review, assessment and recommendation of Cameco Corporation's request to renew its Class IB nuclear fuel facility operating licence FFO-3641.00/2022 for CFM, for a 1-year period.

CNSC staff recommend that the Commission take the following actions:

- Accept the application to renew Cameco Corporation's fuel facility licence for the CFM facility in Port Hope until February 28, 2023
- Issue the proposed licence FFL-3641.00/2023
- Accept the revised financial guarantee for \$10.8 million, in the form of a letter of credit
- Authorize the delegation of authority as set out in this CMD

The following items are attached:

- Proposed changes to the current licence
- Proposed draft licence, FFL-3641.00/2023
- Proposed draft licence conditions handbook
- Current licence, FFO-3641.00/2022

Résumé

Ce document à l'intention des commissaires (CMD) présente de l'information sur un ensemble de questions d'ordre réglementaire concernant Cameco Fuel Manufacturing Inc. (CFM) :

- Examen, évaluation et recommandation du personnel de la CCSN au sujet de la demande de Cameco Corporation concernant le renouvellement, pour une période d'un an, de son permis d'exploitation d'une installation de combustible nucléaire de catégorie IB, FFO-3641.00/2022, pour l'installation de CFM.

Le personnel de la CCSN recommande à la Commission de prendre les mesures suivantes :

- Accepter la demande de renouvellement, jusqu'au 28 février 2023, du permis d'installation de combustible nucléaire de Cameco Corporation pour son installation de CFM située à Port Hope.
- Délivrer le permis proposé FFL-3641.00/2023.
- Accepter la garantie financière révisée au montant de 10,8 millions de dollars sous la forme d'une lettre de crédit.
- Autoriser la délégation de pouvoirs précisée dans le présent CMD.

Les pièces suivantes sont jointes :

- modifications proposées au permis actuel
- ébauche du permis proposé, FFL-3641.00/2023
- ébauche du manuel des conditions de permis proposé
- le permis actuel, FFO-3641.00/2022

Signed/signé le

10 September 2021



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EXECUTIVE SUMMARY

Cameco Corporation (Cameco) operates a Class IB nuclear fuel fabricating facility, in Port Hope, Ontario. Cameco's operating licence FFOL-3641.00/2022 for this facility has a 10-year term, which began on March 1, 2012, and expires on February 28, 2022. Cameco has applied to have its operating licence renewed for a 1-year period.

The fuel fabrication facility in Port Hope has been manufacturing commercial fuel bundles since the late 1950s. The facility was acquired by Cameco in 2006 and renamed Cameco Fuel Manufacturing Inc. (CFM) in 2008. The current licence authorizes CFM to manufacture fuel bundles containing uranium dioxide pellets for use as nuclear fuel primarily in CANDU reactors. CFM is licensed to manufacture up to 125 tonnes of uranium dioxide as pellets of natural and depleted uranium, as well as enriched uranium on a small scale, during any calendar month.

In December 2020, Cameco submitted an application for the renewal of its Class IB nuclear fuel facility operating licence for CFM for a 1-year period [1]. This request is solely to separate CFM licence renewal activities from those for the Cameco Blind River Refinery. The application indicated that Cameco's intent remains to apply for a 10-year licence renewal in a separate licence renewal application. No changes to authorized activities, terms and conditions of the existing licence or associated licence conditions handbook (LCH) were requested in the 1-year application, except to the proposed licence expiry date. However, Canadian Nuclear Safety Commission (CNSC) staff are recommending that environmental release limits be revised, based on proposed, more restrictive exposure-based limits submitted by Cameco subsequent to submission of the application for this renewal.

In Part One of this CMD, CNSC staff present their review, assessment, conclusions and recommendations with respect to Cameco's 1-year licence application. Through desktop reviews and compliance activities, CNSC staff confirmed that, over the current licensing period, Cameco has conducted the authorized activities within the licensing basis requirements and maintained its licensing basis documentation to ensure its programs remain up to date and reflect current regulatory requirements. Cameco's approach remains consistent and CNSC staff's review shows that Cameco continues to meet the requirements set out under the [Nuclear Safety and Control Act](#) and its regulations. CNSC staff recommend the Commission accept staff's assessment and issue the attached proposed licence to allow for a 1-year renewal of Cameco's fuel facility operating licence for CFM. Additionally, CNSC staff recommend that the Commission accepts the revised financial guarantee for the future decommissioning of the CFM facility.

In Part Two of this CMD, CNSC staff provide documentation pertaining to this hearing in writing, including the proposed changes to the licence, proposed draft licence, proposed draft LCH and current licence.

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

PART ONE

This Commission Member Document (CMD) is presented in two parts.

Part One includes:

1. An overview of the matter being presented;
2. Overall conclusions and recommendations;
3. General discussion pertaining to the safety and control areas (SCAs) that are relevant to this submission;
4. Discussion about other matters of regulatory interest; and
5. Addenda material that complements items 1 through 4.

Part Two provides all available information pertaining directly to the current and proposed licence including:

1. Proposed draft Licence, FFL-3641-00/2023;
2. Proposed draft Licence Conditions Handbook; and
3. Current Licence, FFOL-3641.00/2022.

1. OVERVIEW

1.1 Background

CFM and its Location

Cameco Fuel Manufacturing Inc. (CFM) is a wholly owned subsidiary of Cameco Corporation (Cameco) that operates a Class IB nuclear fuel manufacturing facility located at 200 Dorset Street East, Port Hope, Ontario. The municipality of Port Hope is situated on the north shore of Lake Ontario, approximately 100 km east of Toronto.

Figure 1 – Aerial view of the CFM facility, located in Port Hope, Ontario



The CFM facility manufactures nuclear reactor fuel bundles from uranium dioxide powder and assembles nuclear reactor fuel bundles. The finished fuel bundles are primarily shipped for use in Canadian CANDU reactors.

The facility is licensed to manufacture up to 125 tonnes of uranium dioxide as pellets of natural and depleted uranium as well as enriched uranium fuel bundles at a small scale, during any calendar month.

Description of CFM Processes and Materials

The manufacturing of finished nuclear fuel bundles at CFM is divided into 2 operations: pellet manufacturing and fuel bundle assembly.

The uranium dioxide pellet manufacturing operations at CFM involves unloading drums of uranium dioxide powder from transport trailers, mixing the uranium dioxide powder with a lubricating agent (zinc stearate), compacting the powder into pellets, sintering the pellets at a high temperature in a hydrogen atmosphere, grinding the pellets to the required dimensions, inspecting the pellets and transferring them to the bundle assembly operations.

The fuel bundle assembly operations involves inserting pellets into zircaloy tubes, welding end caps to each tube to form a fuel element, assembling the fuel elements into fuel bundles, welding end plates to each bundle, inspecting the completed bundles for quality characteristics and packaging them for shipment.

Cameco's Application for Licence Renewal

In December 2020, Cameco submitted an application for the renewal of its CFM fuel facility operating licence (FFOL-3641.00/2022) for a 1-year period without any changes to the authorized activities, terms and conditions of the existing licence or associated Licence Conditions Handbook (LCH) [1]. Key features of Cameco's application are described in subsection 1.2 of the CMD.

Licence Amendments during the Current Licence Period

Pursuant to section 24 of the [Nuclear Safety and Control Act](#) (NSCA), the Commission issued a 10-year licence to Cameco, valid from March 1, 2012 to February 28, 2022, following a three-day Public Hearing held November 3, 2011 and January 18-19, 2012 [2]. During this licence period, there were no amendments made to the licence.

The CFM LCH has been updated 3 times during the current licence period to incorporate revisions to action levels, updates to licensing basis documents, and other modifications to ensure consistency with the current format for LCHs. A summary of the LCH revisions is provided in Addendum F.

1.2 Highlights

In December 2020, Cameco submitted an application for the renewal of its Class IB nuclear fuel facility operating licence for CFM for a 1-year period [1]. This request is solely to separate CFM relicensing activities from the Cameco Blind River Refinery relicensing activities. The operating licence for the Blind River Refinery also expires in February 2022, and Cameco has applied for renewal of its licence for a period of 10 years. For the 1-year renewal of the CFM licence, Cameco has requested no changes to the authorized activities, terms and conditions of the existing licence or associated LCH, except to the proposed licence expiry date. However, CNSC staff are recommending that environmental release limits be revised, based on proposed, more restrictive exposure-based limits submitted by Cameco subsequent to submission of the application for this renewal.

In its application Cameco also communicated its intent to apply for a 10-year licence renewal for CFM in a separate licence renewal application. A full public hearing for a longer term licence renewal will be held in 2022 should the 1-year licence be granted.

Cameco maintains a financial guarantee for the future decommissioning of its CFM facility in the form of an irrevocable Letter of Credit for C\$21 million. Cameco submitted a revised Preliminary Decommissioning Plan (PDP) in May 2021, which has been reviewed and accepted by CNSC staff. The revised PDP outlines a decrease in the estimated cost of decommissioning to C\$10.8 million. In subsection 4.4 of the CMD, CNSC staff recommend that the Commission accept the revised decommissioning cost for the financial guarantee.

1.3 Overall Conclusions

CNSC staff have reviewed Cameco's licence renewal application and supporting documents and CNSC staff's assessment determined that the application complies with the regulatory requirements. CNSC staff concluded that Cameco's performance during the licensing term was satisfactory and met regulatory requirements.

CNSC staff concluded that the proposed financial guarantee of C\$10.8 million, in the form of an irrevocable letter of credit, is a credible cost estimate, and the financial guarantee instrument is acceptable.

1.4 Overall Recommendations

CNSC staff recommend the Commission:

1. Conclude, pursuant to paragraph 24(4)(a) and (b) of the NSCA, that Cameco:
 - i. is qualified to carry on the activities authorized by the licence
 - ii. will make adequate provisions for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.
2. Issue the proposed 1-year licence for operation of the CFM facility FFL-3641.00/2023.
3. Accept the revised financial guarantee for the future decommissioning of the CFM facility as recommended in subsection 4.4 of this CMD.
4. Authorize the delegation of authority as set out in subsection 4.8 of this CMD.

2. MATTERS FOR CONSIDERATION

2.1 Environmental Assessment

CNSC staff have reviewed the application under the NSCA and have concluded that, given the administrative nature of the proposed licence amendment, there are no impacts to the environment. CNSC staff also determined: 1) that the proposed project does not trigger an Impact Assessment under the [Impact Assessment Act](#) (IAA) because the project does not meet the definition of a "Designated Project" or any of the listed projects on the [Physical Activities Regulations](#), and was not designated under the Minister's power [in subsection 9\(1\)](#) of the IAA; and 2) federal lands review is not required in accordance with section 82 of the IAA, because it is not a project on federal lands.

2.2 Relevant Safety and Control Areas (SCAs)

The functional areas of any licensed facility or activity consist of a standard set of SCAs. Each SCA is comprised of “specific areas” of regulatory interest; however, the specific areas associated with each SCA vary between facility types. See Addendum D, “Safety and Control Framework”, for further information about SCAs.

In the following table:

1. The risk ranking column indicates the overall level of risk associated with each SCA at CFM (refer to Addendum A, “Risk Ranking”).
2. The relevance of each SCA to this CMD is indicated.
3. The rating level for each relevant SCA indicates the overall compliance with regulatory requirements for implementation (refer to Addendum B, “Rating Levels”).

Functional Area	Safety and Control Area	Risk Ranking	Relevant to this CMD?	Rating Level
Management	Management System	M	Yes	SA
	Human Performance Management	M	Yes	SA
	Operating Performance	M	Yes	SA
Facility and Equipment	Safety Analysis	M	Yes	SA
	Physical Design	M	Yes	SA
	Fitness for Service	M	Yes	SA
Core Control Processes	Radiation Protection	M	Yes	SA
	Conventional Health and Safety	M	Yes	SA
	Environmental Protection	M	Yes	SA
	Emergency Management and Fire Protection	M	Yes	SA
	Waste Management	M	Yes	SA
	Security	M	Yes	SA
	Safeguards and Non-Proliferation	M	Yes	SA
	Packaging and Transport	L	Yes	SA

The specific areas that comprise the SCAs for this facility type are identified in Addendum D, section D.2 of this CMD.

2.3 Other Matters of Regulatory Interest

The following table identifies other matters that are relevant to this CMD.

OTHER MATTERS OF REGULATORY INTEREST	
Area	Relevant to this CMD?
Indigenous Consultation	Yes
Other Consultation	Yes
Cost Recovery	Yes
Financial Guarantees	Yes
Improvement Plans and Significant Future Activities	Yes
Licensee's Public Information Program	Yes
Nuclear Liability Insurance	Yes

The relevant "other matters" of regulatory interest are discussed in section 4 of this CMD.

2.4 Regulatory and Technical Basis

The regulatory and technical basis for the matters discussed in this CMD are provided in Addendum C to this document.

For this type of facility, the key requirements come directly from the NSCA and its regulations. The actual citations are placed into Addendum C.

3. GENERAL ASSESSMENT OF SCAS

Cameco has requested a renewal for a 1-year period for its nuclear fuel facility operating licence for CFM. No changes to the authorized activities, terms and conditions of the existing licence or LCH are being requested, except for the expiry date of the licence. Cameco submitted an application, outlining this request, along with a supplemental submission in support of the application [1][3]. However, subsequent to submission of the application of this renewal, Cameco proposed revised release limits at the request of CNSC staff. CNSC staff are recommending implementation of the new release limits as part of this licence renewal. Additional details on the new release limits are provided in section 3.2.2 of this CMD.

For this short-term renewal, CNSC staff assessed the qualification of the licensee and made a determination on whether Cameco has adequately maintained its licensing basis documentation over the current licence period to ensure its programs remain up to date and reflect current regulatory requirements and therefore remain applicable to support the 1-year licence. CNSC staff's assessment included a review of the application and supplemental submission submitted by Cameco, as well as a review of Cameco's past performance in all 14 SCAs. CNSC staff's assessment of Cameco's performance at the CFM facility is based on regulatory oversight activities including onsite and remote inspections, reviews of reports submitted by Cameco, reviews of events and incidents, and general communication and exchanges of information with Cameco.

CNSC staff report annually on Cameco's performance and licensing activities in regulatory oversight reports. Regulatory oversight reports are presented at Commission meetings and provide an opportunity for Indigenous groups and the public to provide input on Cameco's performance and licensing activities.

If the short-term renewal is granted, an in-depth assessment of all 14 SCAs will be presented in a future CNSC staff CMD for the subsequent 10-year licence renewal, commencing in 2023.

3.1 Assessment of Application

Cameco's application outlines its request to renew its licence for the CFM facility for a 1-year period. The application reiterates Cameco's intent to apply for a 10-year renewal in the near future, and explains that following discussions with CNSC staff, Cameco decided to submit the 1-year licence renewal application in order to strategically shift the renewal date for the CFM operating licence and put these proceedings out of phase with the ongoing 10-year licence renewal for the Blind River Refinery. This adjustment will help establish staggered licensing activities for Cameco's Fuel Services Division facilities in the future (i.e., CFM, Blind River Refinery, and Port Hope Conversion Facility).

CNSC staff reviewed the completeness of the application and requested Cameco provide additional information to demonstrate how it will continue to meet requirements set out under the NSCA and associated regulations, its operating licence, and to describe the programs used to meet regulatory requirements. In response, Cameco provided a supplemental submission [3] that includes a general description of the safety and control measures that are currently implemented for each SCA to support the requirements of its current licence and that would continue to be implemented under a future licence, if granted. CNSC staff are satisfied that all the relevant information, in order to make an informed recommendation, was included in the application and supplemental submission.

CNSC staff then reviewed the application, supplemental submission, and referenced program documentation, for the 1-year renewal period to ensure consistency with the current licensing basis and confirm Cameco continues to meet regulatory requirements. CNSC staff conducted this review by SCAs to ensure all relevant areas were adequately covered and that the information provided by Cameco meets regulatory requirements to support the 1-year licence.

The information in Cameco's application describes the same safety and control measures that form part of the licensing basis for the current CFM operating licence. Cameco has actively maintained its licensing basis documentation over the current licence period to ensure its programs remain up to date and reflect current CNSC expectations as documented in recently published and/or updated CNSC regulatory documents. CNSC staff are of the view that the application, and accompanying supporting documents, meet regulatory expectations to support the requested 1-year licence renewal.

3.2 Performance

3.2.1 Overall Performance Trends

During the current licence period, all SCAs for the CFM facility have received a satisfactory rating each year from CNSC staff. These ratings have been presented to the Commission in the annual regulatory oversight reports for uranium and nuclear substance processing facilities in Canada. The most recent ratings were presented to the Commission in the [*Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities in Canada: 2019*](#), where staff rated all SCAs as satisfactory for CFM. CNSC staff continue to oversee regulatory compliance performance for the CFM facility, and will report any changes to trends in the 2020 regulatory oversight report and subsequent annual regulatory oversight reports. The *Regulatory Oversight Report for Uranium and Nuclear Substance Processing Facilities and Research Reactors in Canada: 2020* (CMD 21-M33) will be presented to the Commission during meetings being held December 15-16, 2021.

3.2.2 Overall Safety Performance

CFM has continuously operated in a safe manner throughout the current licence period. As outlined in subsection 2.2 of the CMD, all SCAs are applicable to the CFM facility. Based on performance trends, as discussed in subsection 3.2.1, CFM has consistently received an annual rating of satisfactory for all SCAs, which indicates that CFM has met CNSC regulatory expectations over the current licence period.

In order to assess the safety performance of licensees, the CNSC uses a risk-informed approach when conducting regulatory oversight activities consisting of onsite and remote inspections, technical assessments, reviews of reports submitted by licensees, reviews of events and incidents, and general communication and exchanges of information with licensees.

Information related to the SCAs of radiation protection, environmental protection and conventional health and safety are most representative of overall safety performance. In particular, the SCAs of radiation protection and conventional health and safety are a good measure of the safety of workers at uranium processing facilities, while the SCA of environmental protection is a good measure of the safety of the public and the environment. While Cameco's performance across all SCAs is not explicitly documented in this CMD, CNSC staff's regulatory oversight activities extend to all relevant SCAs.

Throughout the current licence period, CNSC staff conducted over 25 Type II inspections to verify CFM's compliance with the NSCA and its regulations, its operating licence and the programs used to meet regulatory requirements. The inspections were carried out with a focus on SCAs in accordance with the baseline compliance plan for CFM, which identifies a risk-informed frequency for inspections of each SCA. A list of inspections conducted during the current licence period is provided in Addendum E. Recent inspections conducted at CFM (i.e., in 2020 and 2021) have focused on the SCAs of radiation protection, security, fitness for service, environmental protection and training.

The majority of findings at CFM were of low safety significance, however several medium safety significance findings were identified by CNSC inspectors during the first half of the current licence period. The licensee has consistently implemented corrective actions to address regulatory findings. CNSC staff have verified that Cameco has taken appropriate corrective actions and all enforcement actions are now closed, with the exception of only those from the most recent inspections, which Cameco is currently addressing.

Cameco is required to report on action level exceedances and events as per requirements outlined in its licence and in [REGDOC-3.1.2, Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills](#). Prior to Cameco's implementation of REGDOC-3.1.2 in December 2018, requirements for reporting unplanned situations or events were outlined directly in CFM's licence and LCH.

For key radiological and environmental monitoring parameters, Cameco has established action levels accepted by the CNSC that are well below regulatory limits. Action levels, if reached, may indicate a loss of control for a specific parameter. If an action level is exceeded, Cameco must establish the cause and, if applicable, take steps to restore the effectiveness of relevant programs. Action level exceedances must be reported to the CNSC.

Table 1 lists the number of action level exceedances (for radiation protection and environmental protection action levels) and other reported events by Cameco for the CFM facility over the current licence period. CNSC staff are satisfied with Cameco's corrective actions for all reported events at the CFM facility and all events are now considered closed. Although none of these events reported by Cameco were significant enough to warrant reporting to the Commission in an Event Initial Report, all were reported to the Commission through CNSC staff's annual reports on the performance of uranium processing facilities. Action level exceedances will be discussed further within this section under the subsections on the Radiation Protection and Environmental Protection SCAs.

Table 1: Number of action level exceedances and other reported events by Cameco CFM over the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
RP Action Level Exceedence	0	3	2	2	0	1	0	1	0	1
EP Action level Exceedence	1	0	1	0	1	1	1	0	0	0
Other Reportable Events	1	0	0	2	1	2	0	1	1	0

Throughout the current licence period, the regulatory framework has continued to be modernized through the development and update of regulatory documents and standards. Cameco has been very active during this time, developing new, or modifying existing program documentation to implement these regulatory documents/standards at the request of CNSC staff.

Overall, CNSC staff's regulatory oversight activities at the CFM facility, over the current licence period, has consistently determined that:

- the radiation protection program at CFM adequately controls radiation exposures, keeping doses as low as reasonably achievable (ALARA)
- the environmental protection program at CFM is effective in protecting people and the environment
- the conventional health and safety program at CFM continues to protect workers
- the programs in support of the remaining SCAs at CFM, which are also required for ensuring the protection of the health and safety of workers, the public and the environment, continue to be effectively implemented.

3.2.2.1 Radiation Protection

The radiation protection SCA covers the implementation of a radiation protection program in accordance with the [Radiation Protection Regulations](#) (RPR). Cameco is required to implement and maintain a radiation protection program to ensure contamination levels and radiation doses received by individuals are monitored, controlled and maintained ALARA.

During the current licence period, CNSC staff consistently rated the radiation protection SCA at the CFM facility as satisfactory, with Cameco implementing and maintaining a radiation protection program as required by the RPR. No worker's radiation exposure at the CFM facility, exceeded CNSC's regulatory limits.

Workers who have a reasonable probability of receiving an occupational dose greater than 1 mSv in a 1-year dosimetry period are considered nuclear energy workers (NEWs). Table 2 provides the average and maximum effective doses for NEWs at CFM over the current licence period. The average and maximum total effective doses over this period are aligned with the work activities and production levels at CFM. The maximum effective dose received by a NEW during the current licence period was 12.6 mSv, received in 2015, which is approximately 25% of the regulatory effective dose limit of 50 mSv in a 1-year dosimetry period.

Table 2: Average and maximum effective doses for NEWs during the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Average effective dose (mSv)	0.7	0.7	1.3	1.2	1.0	0.7	1.1	1.1	0.9
Maximum effective dose (mSv)	6.0	8.6	8.5	12.6	7.8	6.4	8.0	8.4	6.2
# of NEWs monitored	365	330	317	336	278	270	267	256	247

Note: The regulatory effective dose limit for a NEW is 50 mSv in a 1-year dosimetry period.

Skin and extremity doses at the CFM facility have also been well below the CNSC regulatory equivalent dose limit for a NEW of 500 mSv/year as shown in table 3 and table 4. The average and maximum doses to the skin have been decreasing over the past few years. CFM attributes this trend, in part, to improvements made to work practices and work areas.

Table 3: Average and maximum equivalent doses to the skin for NEWs during the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Average skin dose (mSv)	6.5	7.3	8.1	6.3	6.6	5.5	3.4	3.1	3.1
Maximum individual skin dose (mSv)	93.2	88.4	108.4	95.6	95.7	88.1	59.0	56.9	55.3

Note: The regulatory equivalent dose limit to the skin for a NEW is 500 mSv/year.

Table 4: Average and maximum equivalent doses to extremities for NEWs during the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Average extremity dose (mSv)	16.5	14.3	15.5	15.5	13.2	10.6	15.8	18.4	17.9
Maximum individual extremity dose (mSv)	107.5	87.6	88.4	87.0	98.4	59.0	57.1	90.8	65.6

Note: The regulatory equivalent dose limit to extremities for a NEW is 500 mSv/year.

CNSC staff are satisfied that effective and equivalent doses to NEWs at the CFM facility are being controlled below the CNSC's regulatory limits.

Most recently, CNSC staff conducted a focused inspection on the radiation protection SCA at the CFM facility in February 2020. CNSC staff concluded that Cameco remains in compliance with the RPR and CNSC licence requirements.

Additionally, as part of its radiation protection program, Cameco has established action levels for radiological exposures well below regulatory limits. During the current licence period, there were a total of 10 action level exceedances related to radiation protection. The frequency of exceedances for specific radiation protection action levels were as follows:

- 6 instances where the internal dose (urine analysis) action level was exceeded in 2013, 2014 and 2015
- 2 instances where the extremity dose action level was exceeded in 2015 and 1 in 2019
- 1 instance where the whole body dose action level was exceeded in 2017
- 1 instance where the annual lung counting action level was exceeded in 2021.

CNSC staff reviewed all action level exceedances and are satisfied with the corrective actions implemented by Cameco in response to these events.

CNSC staff will continue to monitor performance of the radiation protection SCA through regulatory oversight activities including inspections and desktop reviews of Cameco's compliance reporting and revisions to relevant program documentation for the CFM facility.

3.2.2.2 Environmental Protection

Protection of the environment and the public are linked to the environmental protection SCA. This SCA covers programs that identify, control and monitor all releases of radioactive and hazardous substances, and effects on the environment from facilities or as a result of licensed activities. During the current licence period, CNSC staff consistently rated the environmental protection SCA at the CFM facility as satisfactory, with Cameco implementing an environmental protection program to ensure the protection of people and the environment.

Uranium releases from the facility to the environment are effectively controlled and monitored, in satisfactory compliance with the conditions of the operating licence and regulatory requirements. Environmental monitoring information in the form of groundwater monitoring, surface water sampling, soil sampling and high-volume air sampler data indicate that the public and the environment continue to be protected from facility releases.

Cameco monitors uranium released as atmospheric emissions from the facility. The monitoring data in table 5 demonstrates that stack and building exhaust ventilation emissions from the facility are effectively controlled as annual average releases remained consistently well below the licence limit of 14 kg/year.

Table 5: Air emission monitoring results during the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total uranium discharge through stacks (kg/year)	0.02	0.03	0.01	0.01	0.03	0.01	0.01	0.004	0.01
Total uranium discharge through building exhaust ventilation (kg/year)	0.57	0.48	0.40	0.45	0.70	0.57	1.25	1.09	0.92

Note: The licence limit is 14 kg/year.

Cameco also monitors uranium released as liquid effluent from the facility. Liquid effluent generated from production processes is directed to an evaporator which removes the majority of uranium. The condensed liquid is sampled and analyzed prior to a controlled release to the sanitary sewer line. Other sources of liquid releases to the sanitary sewer include showers, bathrooms, and laundry facilities. Uranium concentrations in liquid effluent releases to the sanitary sewer are sampled at regular intervals 24 hours per day. The monitoring data in table 6 demonstrates that liquid effluent from the facility remained consistently well below the licence limit of 475 kg/year over the current licence period.

Table 6: Liquid effluent monitoring results during the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total uranium discharge to sewer (kg/year)	0.95	0.83	1.58	1.24	0.85	0.64	0.84	0.39	0.34

Note: The licence limit is 475 kg/year.

Cameco operates 4 high-volume air samplers to measure the airborne concentrations of uranium near the facility fenceline. The samplers are located on the east, north, southwest and northwest sides of the facility. Over the current licence period, the highest average concentration of uranium in ambient air in the 2012-2020 period ($0.0024 \mu\text{g}/\text{m}^3$) has been well below the Ontario Ministry of the Environment, Conservation and Parks' (MECP) Ambient Air Quality Criteria for uranium of $0.03 \mu\text{g}/\text{m}^3$. The MECP's annual air standard came into effect in 2016; however, even prior to the standard coming into effect, the highest average concentration of uranium in ambient air measured from the facility was still below $0.03 \mu\text{g}/\text{m}^3$.

Groundwater has been monitored at the site twice a year since 1999 with a network of monitoring wells. Over the current licence period, groundwater monitoring results continuously confirmed that the current operations are not contributing to the concentrations of uranium on the licensed property. In 2020, a gap analysis of CFM's groundwater protection program was conducted against Canadian Standards Association (CSA) Standard N288.7-15 *Groundwater protection programs at Class I nuclear facilities and uranium mines and mills* [4], which identified minor gaps primarily related to documentation of the program. Cameco will be submitting an updated groundwater protection program by October 2021 to address the identified gaps and complete the implementation of CSA Standard N288.7-15.

Cameco monitors surface water by collecting samples at various locations at different times of the year that are analyzed for uranium. The sample points are located on, and adjacent to, the facility. For the most part, uranium concentrations in surface water samples collected have met the applicable surface water quality guidelines that were in place at the time, however exceedances have been identified occasionally. Although exceedances have been measured, no trends of increasing uranium concentrations have been identified during the licence period. Cameco was required to assess surface water concentrations in its 2016 and 2021 Environmental Risk Assessments. The results of these assessments did not identify potential risk to human health or the environment. CNSC staff reviewed the results from Cameco's surface water monitoring program and concluded that the environment remains protected. CNSC staff will continue to oversee Cameco's monitoring at locations in the vicinity of the CFM facility to confirm that uranium concentrations remain at safe levels in surface water.

Every 3 years, Cameco collects soil samples from 23 locations surrounding the CFM facility. Soil samples were last collected in 2019 and analyzed for uranium content. The soil monitoring results are shown in table 7. The 2019 average uranium concentration in soil near the CFM facility is within the Ontario natural background level of up to 2.5 µg/g. The maximum concentrations detected are attributable to historical contamination in Port Hope, which has long been recognized and continues to be the focus of environmental studies and cleanup activities. The results for all samples were below the Canadian Council of Ministers of the Environment (CCME) [Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health](#) value of 23 µg/g for uranium. This is the most restrictive guideline; therefore, no adverse consequences to human and environmental receptors are expected. The next soil samples will be collected in 2022.

Table 7: Soil monitoring results during the current licence period

	2013	2016	2019	CCME guidelines
Average uranium concentration (µg/g)	3.7	2.5	2.4	23
Maximum uranium concentration (µg/g)	17.4	11.2	7.6	23

During the current licence period, Cameco reported a total of 5 action level exceedances related to environmental protection:

- 1 action level exceedance that occurred in 2012 related to building ventilation, which was the result of a powder spill
- 2 action level exceedances related to sanitary sewer (1 in 2014 and 1 in 2018)
- 1 action level exceedance that occurred in 2016 related to stack emissions
- 1 action level exceedance related to fence line gamma monitoring in 2017.

Action levels are intended to indicate a potential loss of control, or reduction of effectiveness, of a program or control measure, and are set well below levels which may pose a risk to environment or human health. For each action level exceedance, Cameco conducted an investigation and implemented corrective actions where necessary, and fulfilled its reporting requirements to the CNSC. CNSC staff reviewed Cameco's corrective actions in response to each action level exceedance and are satisfied with Cameco's response. There was no impact to the public or the environment as a result of releases associated with the environmental action level exceedances during the current licence period, as emissions remained below levels of concern, and Cameco implemented appropriate corrective actions, where necessary.

Estimated Dose to the Public

The maximum estimated dose to the public from licensed activities at CFM is calculated using monitoring results. CFM monitors gamma radiation effective dose rates at the fenceline of the CFM site to ensure that levels of potential gamma radiation exposure are maintained ALARA. The results of the gamma monitoring are used in the CFM's public dose calculations. The maximum effective doses to a member of the public are shown in table 8. The doses are well below the regulatory dose limit of 1 mSv/year for a member of the public. Based on CNSC staff's review, staff have concluded that the public continues to be protected from emissions from the CFM facility.

Table 8: Maximum effective dose to a member of the public during the current licence period

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Maximum effective dose (mSv)	0.031	0.013	0.018	0.025	0.023	0.022	0.030	0.027	0.020

Note: The regulatory dose limit to a member of the public is 1 mSv/year.

Release Limits

The current release limits for the CFM facility are provided in Appendix A of the licence. These release limits were set at a fraction of the derived release limit (DRL), which is the release rate that would cause an individual of the most highly exposed group to receive and be committed to a dose equal to the regulatory annual public dose limit due to release of a given radionuclide to air or surface water during normal operation of a nuclear facility over the period of a calendar year. CNSC staff requested that Cameco establish Exposure Based Release Limits (EBRLs) for its air and liquid release points at the CFM facility. CNSC staff requested this change because this methodology derives a limit that is more protective of human health and the most sensitive environmental receptors. The EBRLs are set at levels that ensure releases stay well below human health or environmental quality criteria by considering both chemical and radiological toxicity, and harmonizing with applicable federal, provincial or municipal standards where applicable.

For liquid releases to the sewer, Cameco derived an EBRL based on the [CCME - Protection of Aquatic Life Guidelines](#) for uranium and a dilution factor determined from modelling releases through the sewage treatment plant and into Lake Ontario.

For releases to air, Cameco harmonized with the provincial air quality standard for uranium under [Ontario Regulation 419/05 Air Pollution - Local Air Quality](#) and derived an EBRL that applies to all atmospheric release points (i.e., process stacks and building ventilation emission), based on meeting the applicable air quality standards at the Point-of-Impingement.

CNSC staff reviewed Cameco's methodology and accepted the revised release limits (see table 9), as they are protective of the health and safety of the public and the environment. The proposed EBRLs were submitted at the request of CNSC staff and submitted after the application for this licence was received. Consequently, the implementation of these new release limits was not reflected in Cameco's application. CNSC staff have conveyed to Cameco that implementation of these new limits will be recommended in CNSC staff's CMD. Cameco has expressed its support for this change to the licence [5]. The revised release limits are included in Appendix A of the proposed licence and would become effective immediately upon issuance.

Table 9: Exposure based release limits for the CFM facility

Release Source	Parameter	Current		Revised	
		Limit	Averaging Period	Limit	Averaging Period
Water – Releases to sewer	Uranium	475 kg	Annual	1.7 mg/L ¹	Twice weekly, composite discharge
Air – Process stacks and building ventilation emissions.	Uranium	14 kg	Annual	10.5 kg ²	Annual

¹ equivalent to approximately 62 kg/yr

² equivalent to approximately 0.0012 kg/h

Environmental Risk Assessment

An Environmental Risk Assessment (ERA) of nuclear facilities is a systematic process used by licensees to identify, quantify and characterize the risk posed by contaminants and physical stressors in the environment on human and other biological receptors, including the magnitude and extent of the potential effects associated with a facility. The ERA serves as the basis for the development of site-specific effluent limits and controls, and environmental monitoring programs. The results of these programs, in turn, inform and refine future revisions of the ERA.

CFM maintains an ERA in accordance with the requirements of CSA N288.6-12 *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills* [6]. In 2016, Cameco submitted an ERA for the CFM facility which concluded there were no undue risks to the environment or to human health as a result of CFM operations. CNSC staff's review concluded that the ERA methodology is consistent with requirements of the CSA standard N288.6-12 and that the ERA conclusions regarding potential risk to human health and the environment at the CFM facility are valid.

In accordance with CSA N288.6-12, licensees must review their ERAs at a minimum of every 5 years or more frequently if major facility changes are proposed that would trigger the need to re-assess the environmental risks. In order to maintain compliance with CSA N288.6-12, Cameco completed a review of its ERA in 2021, which involved an assessment of recently collected environmental monitoring data, to determine whether conditions have changed and whether the conclusions reached in the 2016 ERA remain valid. The ERA review was submitted to CNSC staff for review in May 2021. CNSC staff performed an assessment of the 2021 ERA review, which verified that the ERA methodology remains consistent with CSA N288.6-12 and the 2016 ERA conclusions remain valid. No new risks have emerged since the 2016 ERA and, therefore, human health and ecological risks attributable to the CFM facility's operations are considered negligible.

Independent Environmental Monitoring Program (IEMP)

In addition to Cameco carrying out required monitoring of its operations, the CNSC carries out its IEMP to verify and confirm that the public and environment around the CFM facility remains safe. The IEMP is a regulatory tool that complements the CNSC's ongoing compliance verification program, and involves CNSC staff taking samples from publicly accessible areas around nuclear sites, and measuring and analyzing the level of relevant contaminants from those samples.

Most recently, in 2020, CNSC staff conducted independent environmental monitoring around the CFM facility. The IEMP sampling plan for CFM focused on the measurement of uranium releases into the air, soil and water environment. Around the CFM facility, the concentrations of uranium in air, water and soil in 2020 were all well below the available guideline levels.

CNSC staff also conducted independent monitoring around the CFM facility in 2014, 2015 and 2017. All IEMP results indicate that the public and the environment near CFM are protected and no human health impacts are expected. These results are consistent with the results submitted by Cameco, demonstrating that Cameco's environmental protection program protects the health and safety of people and the environment. IEMP results for CFM can be found on [CNSC's website](#).

Overall, CNSC staff are satisfied with Cameco's implementation of its environmental protection program during the current licence period.

3.2.2.3 Conventional Health and Safety

The conventional health and safety SCA covers the implementation of a program to manage workplace safety hazards and protect workers. Cameco licensed facilities must develop, implement and maintain effective safety programs to promote safe and healthy workplaces and minimize incidences of occupational injuries and illness. During the current licence period, CNSC staff consistently rated the conventional health and safety SCA at the CFM as satisfactory.

In addition to the NSCA and its associated Regulations, Cameco's CFM activities must also comply with Part II of the [Canada Labour Code](#), the [Canada Occupational Health and Safety Regulations](#) and other applicable federal and provincial health and safety-related acts and regulations.

Cameco has been able to maintain steady operations at the CFM facility while respecting COVID-19 pandemic restrictions and respective health regulations and guidelines. Cameco has made considerable efforts to ensure the health and safety of its workers during the COVID-19 pandemic. During the pandemic, employees who have been able to work from home have been encouraged to do so; while those required to be onsite to perform work have been permitted entry. Staffing levels have been monitored closely to maintain the minimum complement at all times for emergency response.

As provincial COVID-19 restrictions have been scaled back, Cameco continues to implement precautionary actions with entry assessments and offering in-house COVID-19 testing on a bi-weekly basis for all employees. Cameco continues to take necessary precautions to prevent the spread of COVID-19 at the CFM facility by maintaining measures to permit social distancing and precautionary protocols to protect the health and safety of its workers.

CNSC inspectors routinely verify Cameco's conventional health and safety program at the CFM facility by observing workers' compliance with requirements related to workplace safety, proper use of personal protective equipment, use of signage and barriers along with the general housekeeping of the site.

A key performance measure for the conventional health and safety SCA is the number of lost-time injuries (LTIs) that occur per year. An LTI is an injury that takes place at work and results in the worker being unable to return to work to carry out their duties in a period of time. During the current licence period, 1 LTI occurred at CFM. The injury resulted in 1 day of lost time.

Overall, CNSC staff are satisfied that Cameco's implementation of its conventional health and safety program during the current licence period is acceptable.

4. OTHER MATTERS OF REGULATORY INTEREST

4.1 Indigenous Consultation

The common law duty to consult with Indigenous peoples applies when the Crown contemplates actions that may adversely impact potential or established Indigenous and/or treaty rights. The CNSC ensures that all of its licensing decisions under the NSCA uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty rights pursuant to section 35 of the *Constitution Act, 1982*.

4.1.1 Discussion

CNSC staff have identified the First Nation and Métis groups who may have an interest in the renewal of the CFM licence. These groups include:

- Williams Treaties First Nations, which include Alderville First Nation, Curve Lake First Nation, Hiawatha First Nation, the Mississaugas of Scugog Island First Nation, the Chippewas of Beausoleil First Nation, the Chippewas of Georgina Island First Nation and the Chippewas of Rama First Nation
- Métis Nation of Ontario
- Mohawks of the Bay of Quinte.

These Indigenous groups were identified due to the proximity of their communities, treaty areas and/or traditional territories to the CFM site, or due to previously expressed interest in being kept informed of CNSC licensed activities occurring in or proximal to their territories.

CNSC Staff Engagement Activities

In April 2021, CNSC staff sent letters of notification to the First Nation and Métis groups who may have an interest in the CFM licence renewal application. These letters provided information regarding the licence application, details on how to participate in the Commission's hearing process, as well as the availability of participant funding to facilitate participation in the regulatory process.

All of the identified Indigenous groups have been encouraged to participate in the regulatory review process and in the hearing in writing to advise the Commission directly of any concerns they may have in relation to this licence renewal application. CNSC staff also meet on a monthly basis with Curve Lake First Nation as part of the recently signed Terms of Reference and provide updates on areas of interest or concern regarding CNSC-regulated facilities and activities, such as the CFM site. On June 24, 2021, CNSC staff gave a presentation to Curve Lake First Nation to provide further information on the CFM licence renewal application. CNSC staff remain open to meeting with Indigenous groups to discuss this licence renewal application and to encourage and maintain productive and respectful relationships.

To date, the identified Indigenous groups have not expressed any specific concerns with regards to the licence renewal application. Should any concerns be identified, CNSC staff will provide additional information with regards to ongoing engagement activities, including any concerns expressed by Indigenous groups, to the Commission and the public in a supplemental CMD, if required.

Licensee Engagement Activities

CNSC [REGDOC-3.2.2, *Indigenous Engagement*](#), published in February 2016 (updated in August 2019), sets out requirements and guidance for licensees whose proposed projects may raise the Crown's duty to consult. Based on the information received in the licensee's application, this licence renewal is not expected to cause any new adverse impacts to potential or established Indigenous and/or treaty rights and therefore does not raise the formal requirements of REGDOC-3.2.2.

Cameco has informed the identified Indigenous groups of their application to renew the CFM licence, and has met with Curve Lake First Nation as they demonstrated interest in knowing more about the facility. CNSC staff encourage Cameco to continue its engagement with Curve Lake First Nation, as well as with other interested groups in order to discuss their interests and concerns with regards to the CFM licence.

4.1.2 Conclusion

Based on the information received in Cameco's licence application, CNSC staff have determined that the activities to be conducted under this decision do not involve any changes to the CFM site. Therefore, this licence renewal is not expected to cause any new adverse impacts to potential or established Indigenous and/or treaty rights and does not raise the formal requirements of REGDOC-3.2.2.

However, the CNSC is committed to meaningful, ongoing engagement with Indigenous groups that have an interest in CNSC-regulated facilities and activities.

Cameco has informed and engaged with the identified Indigenous groups of their application to renew the CFM licence. CNSC staff encourage Cameco to continue to engage with interested Indigenous groups on this licence renewal application and other ongoing activities of interest.

4.1.3 Recommendation

There is no requirement for any additional licensing activity or any additional licence conditions.

4.2 Other Consultation

The CNSC made available up to \$30,000 through its Participant Funding Program (PFP) to Indigenous peoples, members of the public and stakeholders in providing value-added information to the Commission through informed and topic-specific interventions. This funding was offered to support recipients' review of Cameco's application and associated documents and to prepare written submissions for the Commission hearing.

4.2.1 Discussion

The deadline for applications was May 14, 2021. A Funding Review Committee (FRC), independent from CNSC staff, reviewed the funding applications received, and made recommendations on the allocation of funding to eligible applicants. Based on recommendations from the FRC, the CNSC awarded a total of C\$8,800.00 in funding to Curve Lake First Nation, who is required to submit its written intervention to the Commission Secretariat by November 16, 2021, for the Commission's consideration.

4.2.2 Conclusion

Through the PFP, the CNSC has offered assistance to interested members of the public, Indigenous groups, and other stakeholders to prepare for and participate in the Commission's hearing in writing on Cameco's application to renew the CFM licence.

4.3 Cost Recovery

A Class I licensed facility is subject to the requirements of Part 2 of the [CNSC Cost Recovery Regulations](#). Fees are normally charged on an annual basis and are paid by the licensee on a quarterly basis.

4.3.1 Discussion

CFM has consistently paid its cost recovery fees in full during the current licensing period.

4.3.2 Conclusion

Based on previous performance there is no concern over the payment of future cost recovery fees.

4.3.3 Recommendation

There is no requirement for any additional licensing activity or licence conditions.

4.4 Financial Guarantees

The Cameco CFM facility is required to maintain a financial guarantee for the future decommissioning of its operating site that is acceptable to the Commission.

4.4.1 Discussion

On November 16, 2017, the Commission approved Cameco's financial guarantee, which is in the form of an irrevocable letter of credit from the Royal Bank of Canada in the amount of C\$21 million [7]. Cameco is currently in compliance with condition 16.1 of its licence pertaining to financial guarantees.

Cameco submitted an update of its PDP for the CFM facility on May 4, 2021 [8] in accordance with condition 12.2 of its current licence, which requires that the PDP be reviewed at a minimum 5 year frequency. The previous PDP for the CFM facility was submitted in 2016. Cameco is currently executing a multi-year action plan to minimize the accumulated wastes at the CFM facility. Updates on the progress of this activity were reported in recent annual compliance monitoring reports. In the 2019 and 2020 CFM annual compliance monitoring reports, Cameco reported the removal of legacy waste from the site each year. As reviewed by CNSC staff in the revised PDP, Cameco has reduced the volume of radioactive contaminated waste on site by approximately 70% between 2015 and 2020. This reduces the liability of future decommissioning costs, and therefore reduces the total value required for the financial guarantee. Cameco has also identified reductions to other indirect costs associated with decommissioning that are reflected in the revised cost estimate.

CNSC staff verified the financial guarantee in accordance with the contents of the revised PDP and assessed the cost estimate against the criteria documented in CNSC regulatory guide [G-206: Financial Guarantees for the Decommissioning of Licensed Activities](#) and find it acceptable.

Cameco has therefore proposed a revised financial guarantee in the form of an irrevocable letter of credit for C\$10.8 million. CNSC staff confirmed that in accordance with G-206, the letter of credit is an acceptable financial guarantee instrument.

4.4.2 Conclusion

CNSC staff concluded that Cameco's proposed financial guarantee for the CFM facility meets the requirements of G-206.

4.4.3 Recommendation

CNSC staff recommend that the Commission accept Cameco's proposed financial guarantee which is in the form of an irrevocable letter of credit from a Canadian Bank in the amount of C\$10.8 million.

4.5 Improvement Plan and Significant Future Activities

Cameco has not identified any significant future activities at its CFM facility in its application for a 1-year licence.

4.6 Licensee Public Information Program

The CNSC requires all Class I nuclear facility licensees to establish and implement a Public Information Program (PIP) to inform persons living in the vicinity of the facility on how the licensed activities conducted at the facility affect the environment and health and safety of the community.

4.6.1 Discussion

Cameco has an acceptable PIP in place for its CFM facility. The primary objective of the program is to provide the residents of the Town of Port Hope and surrounding community relevant information on how activities at the CFM facility affect the environment and health and safety of employees and the community. Cameco's PIP is designed to fulfill the requirements of CNSC's [REGDOC-3.2.1, *Public Information and Disclosure*](#).

Cameco maintains a dedicated community website (<https://www.camecofuel.com>) to communicate its operations at its Ontario facilities. Documents supporting licensing activities, compliance reports, and other select reports or technical summaries are made available to the public through this website.

In addition to its community website, Cameco also uses social media, advertising, media relations and public inquiries to provide information to the public.

4.6.2 Conclusion

It is CNSC staff's view that Cameco's implementation of the PIP for CFM has been satisfactory.

4.6.3 Recommendation

There is no requirement for any additional licensing activity or licence conditions.

4.7 Nuclear Liability Insurance

The *Nuclear Liability and Compensation Act* (NLCA) establishes a compensation and liability regime in the unlikely event of a nuclear accident resulting in civil injury and damages. The NLCA applies to nuclear facilities designated as nuclear installations, which includes nuclear power plants, nuclear research reactors, nuclear material processing plants and facilities used to manage nuclear fuel waste and other radioactive waste. The NLCA does not apply to facilities such as uranium mines, refineries using natural uranium and hospital nuclear laboratories. Cameco is expected to meet obligations for nuclear liability coverage under the NLCA for the CFM facility.

4.7.1 Discussion

CFM, as a nuclear fuel processing facility has had nuclear liability insurance for the duration of the current licence period. The facility processes fuel element bundles from natural and depleted uranium as well as has the capability to process and store enriched uranium.

4.7.2 Conclusion

Cameco provided supporting documentation which demonstrates that nuclear liability insurance continues to be in place for the CFM facility.

4.7.3 Recommendation

There is no requirement for any additional licensing activity or new licence conditions.

4.8 Delegation of Authority

The Commission may include in a licence any condition it considers necessary for the purposes of the NSCA. The Commission may delegate authority to CNSC staff with respect to the administration of licence conditions, or portions thereof.

4.8.1 Discussion

There are 6 proposed licence conditions in the current and proposed CFM licence, FFL-3641.00/2023 that contain the phrase “the Commission or a person authorized by the Commission”:

- LC 1.4 General

The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes or standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission.

- LC 2.4 Management Systems

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, and routine reports on the results of monitoring programs. The process shall define the frequency of the routine reports.

- LC 6.2 Physical Design

The licensee shall not make any change to the design of, or equipment at the facility, that would introduce hazards different in nature or greater in probability than those considered by the safety analysis, without the prior written approval of the Commission or a person authorized by the Commission.

- LC 8.2 Radiation Protection

The licensee shall notify the Commission or a person authorized by the Commission within 24 hours of becoming aware that an action level has been exceeded and shall file a written report within 45 working days of becoming aware of the matter.

- LC 12.2 Waste Management

The licensee shall maintain a preliminary decommissioning plan (PDP) for decommissioning the facility. This PDP shall be reviewed every five years or when requested by the Commission, or a person authorized by the Commission.

- LC 14.2 Safeguards

The licensee shall not make changes to operations, equipment or procedures that would affect the implementation of safeguards measures, except with the prior written approval of the Commission, or a person authorized by the Commission.

4.8.2 Recommendation

For each of the above licence conditions, with the exception of LC 14.2, CNSC staff recommend that the Commission delegate its authority for the purposes described in the above licence conditions to the following staff:

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

For LC 14.2, CNSC staff recommend that the Commission delegate its authority for the purposes described in the licence condition to the following staff:

- Director, International Safeguards Division
- Director General, Directorate of Security and Safeguards
- Vice-President, Technical Support Branch

5. OVERALL CONCLUSIONS AND RECOMMENDATIONS

CNSC staff's conclusions and recommendations consider an overall assessment of the licence application and Cameco's compliance with requirements of the NSCA and its regulations, and requirements of Cameco's licence and LCH during the current licence period.

CNSC staff's assessment determined that the application complies with the regulatory requirements. CNSC staff concluded that Cameco's performance during the licensing term was satisfactory and met regulatory requirements.

CNSC staff concluded that the proposed financial guarantee of C\$10.8 million, in the form of an irrevocable letter of credit, is a credible cost estimate, and the financial guarantee instrument is acceptable.

Based on the above conclusions, CNSC staff recommend that the Commission:

1. Conclude, pursuant to paragraph 24(4)(a) and (b) of the NSCA, in that Cameco:
 - i. is qualified to carry on the activities authorized by the licence
 - ii. will make adequate provisions for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.
2. Issue the proposed 1-year licence for operation of the CFM facility FFL-3641.00/2023.
3. Accept the revised financial guarantee for the future decommissioning of the CFM facility as recommended in subsection 4.4 of this CMD.
4. Authorize the delegation of authority as set out in subsection 4.8 of this CMD.

REFERENCES

- [1] Letter from D. Clark (Cameco) to M. Leblanc (CNSC), Subject: Application for Renewal of the Cameco Fuel Manufacturing Inc. Operating Licence, FFOL-3641.0/2022, December 2020, e-Doc 6437285.
- [2] CNSC. 2012. Record of Decision, Including Reasons for Decision, Cameco Corporation – Application for the Renewal of the Operating Licence for Cameco Fuel Manufacturing Inc. in Port Hope, Ontario, e-Doc 3916267.
- [3] Letter from R. Peters (Cameco) to M. Leblanc (CNSC), Subject: Supplemental Submission for Cameco Fuel Manufacturing One Year Licence Renewal, March 2021, e-Doc 6507835.
- [4] CSA Group, CSA N288.7-15 *Groundwater protection programs at Class I nuclear facilities and uranium mines and mills*, 2015.
- [5] Letter from T. Smith (Cameco) to G. Smith (CNSC), Subject: Re: CNSC Staff Review of Cameco Fuel Manufacturing Exposure Based Release Limits, July 15, 2021, e-doc 6606789.
- [6] CSA Group, CSA N288.6-12 *Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills*, 2012.
- [7] CNSC. 2017. Record of Decision, Cameco Fuel Manufacturing Inc. – Financial Guarantee for the Future Decommissioning of the Cameco Fuel Manufacturing Inc. Port Hope Facility, e-Doc 5393151.
- [8] Letter from R. Peters (Cameco) to G. Smith (CNSC), Subject: Cameco Fuel Manufacturing Inc. Preliminary Decommissioning Plan, May 04, 2021, e-Doc 6555820.

GLOSSARY

For definitions of terms used in this document, see [REGDOC-3.6 Glossary of CNSC Terminology](#), which includes terms and definitions used in the [Nuclear Safety and Control Act](#) and the Regulations made under it, and in CNSC regulatory documents and other publications.

Additional terms and acronyms used in this CMD are listed below.

ALARA	As low as reasonably achievable
Cameco	Cameco Corporation
CCME	Canadian Council of Ministers of the Environment
CFM	Cameco Fuel Manufacturing
CMD	Commission Member Document
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
DRL	Derived Release Limit
EBRL	Exposure Based Release Limit
ERA	Environmental Risk Assessment
FFL	Fuel Facility Operating Licence
FRC	Funding Review Committee
IAA	<i>Impact Assessment Act</i>
IEMP	Independent Environmental Monitoring Program
LC	Licence Condition
LCH	Licence Conditions Handbook
LTI	Lost-time injury
MECP	Ministry of the Environment, Conservation and Parks
NEW	Nuclear Energy Worker
NLCA	<i>Nuclear Liability and Compensation Act</i>
NSCA	<i>Nuclear Safety and Control Act</i>
PDP	Preliminary Decommissioning Plan
PFP	Participant Funding Program
PIP	Public Information Program
REGDOC	Regulatory Document
RPR	<i>Radiation Protection Regulations</i>
SCA	Safety and Control Area

A. RISK RANKING

The CNSC uses a risk-informed regulatory approach in the management and control of regulated facilities and activities. CNSC staff have therefore established an approach to identifying appropriate levels of regulatory monitoring and control for specific classes of licensed facilities and types of licensed activities based on risk ranking.

Risk ranking is applied to each SCA, and is determined by considering the probability and consequence of adverse incidents associated with each SCA as it relates to the given facility and activity types.

The methodology used to determine risk ranking is based on Canadian Standards Association guideline CAN/CSA-Q850, Risk Management: Guideline for Decision Makers. This guideline provides a description of the major components of the risk management decision process and their relationship to each other, and describes a process for acquiring, analyzing, evaluating, and communicating information that is necessary for making decisions.

In section 2.2 of the CMD, in the Relevant Safety Control Areas table, the “Risk Ranking” column shows a high (H), moderate (M) or low (L) indicator for each SCA that is relevant to the current facility and activities being addressed in this CMD. The risk rankings are not static and will change over time for a given facility and activities (e.g., facilities age, facilities and equipment are upgraded, activities cease or begin, licensees change, technology and programs mature, knowledge and understanding of impacts and probabilities increase, etc.).

The following matrix provides a high-level overview of risk ranking, and the management and monitoring approach associated with the various degrees of risk.

APPROACH TO ASSESSING AND MANAGING POTENTIAL RISK			
CONSEQUENCE	MANAGEMENT/MONITORING APPROACH		
Significant Impact	Considerable management of risk is required	Must manage and monitor risk with occasional control	Extensive management is essential. Constant monitoring and control
Moderate Impact	Occasional monitoring	Management effort is recommended	Management effort and control is required
Low Impact	Random monitoring	Regular monitoring	Manage and monitor
Probability of Occurrence	Unlikely to Occur	Might Occur	Expected to Occur

RISK RANKING SCALE			
L	Low Risk	M	Moderate Risk
		H	High Risk

On this basis, a high-risk SCA would be subject to increased regulatory scrutiny and control while a low-risk SCA would generally require minor verification and control.

B. RATING LEVELS

Fully Satisfactory (FS)

Safety and control measures implemented by the licensee are highly effective. In addition, compliance with regulatory requirements is fully satisfactory, and compliance within the safety and control area (SCA) or specific area exceeds requirements and CNSC expectations. Overall, compliance is stable or improving, and any problems or issues that arise are promptly addressed.

Satisfactory (SA)

Safety and control measures implemented by the licensee are sufficiently effective. In addition, compliance with regulatory requirements is satisfactory. Compliance within the SCA meets requirements and CNSC expectations. Any deviation is minor and any issues are considered to pose a low risk to the achievement of regulatory objectives and CNSC expectations. Appropriate improvements are planned.

Below Expectations (BE)

Safety and control measures implemented by the licensee are marginally ineffective. In addition, compliance with regulatory requirements falls below expectations. Compliance within the SCA deviates from requirements or CNSC expectations to the extent that there is a moderate risk of ultimate failure to comply. Improvements are required to address identified weaknesses. The licensee is taking appropriate corrective action.

Unacceptable (UA)

Safety and control measures implemented by the licensee are significantly ineffective. In addition, compliance with regulatory requirements is unacceptable and is seriously compromised. Compliance within the SCA is significantly below requirements or CNSC expectations, or there is evidence of overall non-compliance. Without corrective action, there is a high probability that the deficiencies will lead to unreasonable risk. Issues are not being addressed effectively, no appropriate corrective measures have been taken and no alternative plan of action has been provided. Immediate action is required.

C. BASIS FOR THE RECOMMENDATION(S)

C.1 Regulatory Basis

The recommendations presented in this CMD are based on compliance objectives and expectations associated with the relevant SCAs and other matters. The regulatory basis for the matters that are relevant to this CMD are as follows.

Management System

The regulatory foundation for the recommendation(s) associated with Management System includes the following:

- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraph:
 - 3(d), the proposed management system for the activity to be licensed, including measures to promote and support safety culture.
- The [*General Nuclear Safety and Control Regulations*](#) require that an application for a licence shall contain, under paragraphs:
 - 3(1)(k), the applicant's organizational management structure insofar as it may bear on the applicant's compliance with the NSCA and the Regulations made under the NSCA, including the internal allocation of functions, responsibilities and authority.
 - 15(a), the persons who have the authority to act for them (the applicant/licensee) in their dealings with the Commission.
 - 15(b), the names and position titles of the persons who are responsible for the management and control of the licensed activity and the nuclear substance, nuclear facility, prescribed equipment or prescribed information encompassed by the licence.

Human Performance Management

The regulatory foundation for the recommendation(s) associated with Human Performance Management includes the following:

- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraphs:
 - 3(d.1), the proposed human performance program for the activity to be licensed, including measures to ensure workers' fitness for duty.
 - 6(m), the proposed responsibilities of and the qualification requirements and training program for workers, including the procedures for the requalification of workers
 - 6(n), the results that have been achieved in implementing the program for recruiting, training and qualifying workers in respect of the operation and maintenance of the nuclear facility.

- The [*General Nuclear Safety and Control Regulations*](#) require that licensees, under paragraphs:
 - 12(1)(a), ensure the presence of a sufficient number of qualified workers to carry on the licensed activity safely and in accordance with the Act, the regulations made under the Act and the licence.
 - 12(1)(b), train the workers to carry on the licensed activity in accordance with the Act, the regulations made under the Act and the licence.
 - 12(1)(e), require that every person at the site of the licensed activity to use equipment, devices, clothing and procedures in accordance with the Act, the regulations made under the Act and the licence.

Operating Performance

The regulatory foundation for the recommendation(s) associated with operating performance includes the following:

- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence to operate a Class I nuclear facility shall contain, under paragraph:
 - 6(d), the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility.

Safety Analysis

The regulatory foundation for the recommendation(s) associated with safety analysis includes the following:

- The [*General Nuclear Safety and Control Regulations*](#) require that an application for a licence shall contain, under paragraph:
 - 3(1)(i), a description and the results of any test, analysis or calculation performed to substantiate the information included in the application.
- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraphs:
 - 6(c), a final safety analysis report demonstrating the adequacy of the design of the nuclear facility.
 - 6(h), the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects.

Physical Design

The regulatory foundation for the recommendation(s) associated with physical design includes the following:

- Paragraph 3(1)(d) of the [General Nuclear Safety and Control Regulations](#) requires that an application for a licence shall contain a description of any nuclear facility, prescribed equipment or prescribed information to be encompassed by the licence.
- The [Class I Nuclear Facilities Regulations](#) require that an application for a licence shall contain, under paragraphs:
 - 3(a), a description of the site of the activity to be licensed, including the location of any exclusion zone and any structures within that zone;
 - 3(b), plans showing the location, perimeter, areas, structures and systems of the nuclear facility;
 - 6(a), a description of the structures at the nuclear facility, including their design and their design operating conditions;
 - 6(b), a description of the systems and equipment at the nuclear facility, including their design and their design operating conditions;
 - 6(c), a final safety analysis report demonstrating the adequacy of the design of the facility; and
 - 6(d), proposed measures, policies, methods and procedures for operating and maintaining the facility.

Fitness for Service

The regulatory foundation for the recommendation(s) associated with fitness for service includes the following:

- The [Class I Nuclear Facilities Regulations](#) require that an application for a licence shall contain, under paragraph:
 - 6(d), the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility.

Radiation Protection

The regulatory foundation for the recommendation(s) associated with radiation protection includes the following:

- The [General Nuclear Safety and Control Regulations](#) require, under subsection 3(1), that a licence application contain the following information under paragraphs:
 - 3(1)(e), the proposed measures to ensure compliance with the [Radiation Protection Regulations](#).
 - 3(1)(f), any proposed action level for the purpose of section 6 of the [Radiation Protection Regulations](#).
- The [Radiation Protection Regulations](#)
- The [Class I Nuclear Facilities Regulations](#) require that an application for a licence to operate a Class I nuclear facility shall contain, under paragraphs:

- 6(e), the proposed procedures for handling, storing, loading and transporting nuclear substances and hazardous substances.
- 6(h), the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measure that will be taken to prevent or mitigate those effects.

Conventional Health and Safety

The regulatory foundation for the recommendation(s) associated with Conventional Health and Safety includes the following:

- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraph:
 - 3(f), the proposed worker health and safety policies and procedures.
- CFM's activities and operations must comply with the [*Canada Labour Code, Part II: Occupational Health and Safety*](#).

Environmental Protection

The regulatory foundation for the recommendation(s) associated with Environmental Protection includes the following:

- The [*General Nuclear Safety and Control Regulations*](#), under paragraphs 12(1)(c) and (f), require that each licensee take all reasonable precautions to protect the environment and the health and safety of persons, and to control the release of radioactive nuclear substances and hazardous substances within the site of the licensed activity and into the environment.
- The [*Radiation Protection Regulations*](#) prescribe dose limits for the general public, which under Subsection 1(3) is 1 mSv per calendar year.
- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraphs:
 - 3(e), the name, form, characteristics and quantity of any hazardous substances that may be on the site while the activity to be licensed is carried on.
 - 3(g), the proposed environmental protection policies and procedures.
 - 3(h), the proposed effluent and environmental monitoring programs.
 - 6(e), the proposed procedures for handling, storing, loading and transporting nuclear substances and hazardous substances.
 - 6(h), the effects on the environment and the health and safety of persons that may result from the operation and decommissioning of the nuclear facility, and the measures that will be taken to prevent or mitigate those effects.
 - 6(i), the proposed location of points of release, the proposed maximum quantities and concentrations, and the anticipated volume and flow rate of releases of nuclear substances and hazardous substances into the environment, including their physical, chemical and radiological characteristics.

- 6(j), the proposed measures to control releases of nuclear substances and hazardous substances into the environment.

Emergency Management and Fire Protection

The regulatory foundation for the recommendation(s) associated with Emergency Management and Response includes the following:

- 12(1)(c) of the [General Nuclear Safety and Control Regulations](#) states that every licensee shall “take all reasonable precautions to protect the environment and the health and safety of persons and to maintain security”.
- 12(1)(f) of the [General Nuclear Safety and Control Regulations](#) states that every licensee shall “take all reasonable precautions to control the release of radioactive nuclear substances or hazardous substances within the site of the licensed activity and into the environment of the licensed activity”.
- The [Class I Nuclear Facilities Regulations](#) require that an application for a licence shall contain, under paragraph:
 - 6(k) information on the licensee’s proposed measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the environment, the health and safety of persons and the maintenance of national security, including measures to:
 - Assist offsite authorities in planning and preparing to limit the effects of an accidental release;
 - Notify offsite authorities of an accidental release or the imminence of an accidental release;
 - Report information to offsite authorities during and after an accidental release;
 - Assist offsite authorities in dealing with the effects of an accidental release; and
 - Test the implementation of the measures to prevent or mitigate the effects of an accidental release.

Waste Management

The regulatory foundation for the recommendation(s) associated with Waste Management includes the following:

- The [General Nuclear Safety and Control Regulations](#) require that an application for a licence include, under paragraph:
 - 3(1)(j), the name, quantity, form and volume of any radioactive waste or hazardous waste that may result from the activity to be licensed, including waste that may be stored, managed, processed, or disposed of at the site of the activity to be licensed, and the proposed method for managing and disposing of that waste.

Security

The regulatory foundation for the recommendation(s) associated with Security includes the following:

- It is a requirement of all Class I licensees to comply with the [Nuclear Security Regulations](#).
- The [General Nuclear Safety and Control Regulations](#) section 3 requires that the licence contains
 - (1) (e) the proposed measures to ensure compliance with the [Radiation Protection Regulations](#), the [Nuclear Security Regulations](#) and the [Packaging and Transport of Nuclear Substances Regulations, 2015](#);
 - (1) (g) the proposed measures to control access to the site of the activity to be licensed and the nuclear substance, prescribed equipment or prescribed information; and
 - (1) (h) the proposed measures to prevent loss or illegal use, possession or removal of the nuclear substance, prescribed equipment or prescribed information.
- Under Class I Nuclear Facilities Regulations section 6 (1) the licence application shall contain
 - (l) the proposed measures to prevent acts of sabotage or attempted sabotage at the nuclear facility, including measures to alert the licensee to such acts.
- Under section 12 of the [General Nuclear Safety and Control Regulations](#), the licensee shall:
 - (g) implement measures for alerting the licensee to the illegal use or removal of a nuclear substance, prescribed equipment or prescribed information, or the illegal use of a nuclear facility;
 - (h) implement measures for alerting the licensee to acts of sabotage or attempted sabotage anywhere at the site of the licensed activity; and
 - (j) instruct the workers on the physical security program at the site of the licensed activity and on their obligations under that program.
- Under section 23 of the [General Nuclear Safety and Control Regulations](#), the licensee shall protect prescribed information defined in section 21 from unauthorized transfer or disclosure.
- In addition, [REGDOC-2.12.3, Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material](#) provides regulatory expectations and guidance for licensees regarding the CNSC's expectations under the GNSCR for security.

Safeguards and Non-Proliferation

The regulatory foundation for the recommendation(s) associated with Safeguards and Non-Proliferation includes the following:

- It is a requirement of the [*General Nuclear Safety and Control Regulations*](#) under paragraph 12(1)(i) that each licensee take all necessary measures to facilitate Canada's compliance with any applicable safeguards agreement, where the applicable agreements are:
 - The [*Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*](#).
 - The [*Protocol Additional to the Agreement between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*](#).

Packaging and Transport

The regulatory foundation for the recommendation(s) associated with Packaging and Transport includes the following:

- The [*Packaging and Transport of Nuclear Substances Regulations, 2015*](#); and
- Transport Canada's [*Transportation of Dangerous Goods Regulations*](#).

Decommissioning Strategy and Financial Guarantees

The regulatory foundation for the recommendation(s) associated with CFM's Decommissioning Strategy and Financial Guarantees includes:

- The [*General Nuclear Safety and Control Regulations*](#) require that an application for a licence shall contain, under paragraph:
 - 3(1)(l), a description of any proposed financial guarantee relating to the activity to be licensed.
- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraph:
 - 3(k), the proposed plan for the decommissioning of the nuclear facility or of the site.

Licensee's Public Information Program

- The [*Class I Nuclear Facilities Regulations*](#) require that an application for a licence shall contain, under paragraph:
 - 3(j), information on the licensee's public information program.

C.2 Technical Basis

The technical basis for the recommendations presented in this CMD is addressed in detail in the table below. Each of the standards, codes, and CNSC regulatory documents listed below are part of the current licensing basis and remain applicable for the 1-year licence.

CFM- Applicable Standards and Codes per Safety and Control Area

SCA	Document Title	Sufficient?	Adequate?
Management System	CSA N286-12 (R 2017): <i>Management System Requirements for Nuclear Facilities</i>	Y	Y
	CNSC REGDOC-2.1.2 (2018): <i>Safety Culture*</i>	Y	Y
	CNSC REGDOC-3.1.2 (2018): <i>Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills</i>	Y	Y
	CNSC REGDOC-3.2.1 (2018): <i>Public Information and Disclosure</i>	Y	Y
Human Performance Management	CNSC REGDOC-2.2.2 (2016): <i>Personnel Training, Version 2</i>	Y	Y
Operating Performance	CSA B51 (2019): <i>Boiler Pressure Vessel and Pressure Piping Code</i>	Y	Y
Safety Analysis	CNSC REGDOC-2.4.3 <i>Nuclear Criticality Safety</i>	Y	Y
Physical Design	CSA N393-13 (R2018): <i>Fire Protection for facilities that process, store and handle nuclear substances</i>	Y	Y
	NRCC 56190 (2015): <i>National Building Code of Canada</i>	Y	Y
	NRCC 56192 (2015): <i>National Fire Code of Canada</i>	Y	Y
Fitness for Service	CSA N393-13 (R2018): <i>Fire Protection for facilities that process, handle or store nuclear substances</i>	Y	Y
	NRCC 56192 (2015): <i>National Fire Code of Canada</i>	Y	Y
Radiation Protection	CNSC REGDOC-3.1.2 (2018): <i>Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills</i>	Y	Y
Conventional Health and Safety	CSA Z94.4 (2018), <i>Selection, Use and Care of Respirators</i>	Y	Y

SCA	Document Title	Sufficient?	Adequate?
Environmental Protection	CSA N288.1 (R2019): <i>Guidelines for Calculating Derived Release Limits for Radioactive Material in Airborne and Liquid Effluents for Normal Operation of Nuclear Facilities</i>	Y	Y
	CSA N288.4 (R2015): <i>Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills</i>	Y	Y
	CSA N288.5 (R2016): <i>Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills</i>	Y	Y
	CSA N288.6 (R2017): <i>Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills</i>	Y	Y
	CSA N288.7 (2015): <i>Groundwater protection programs at Class I nuclear facilities and uranium mines and mills**</i>	Y	Y
	CSA N288.8 (2017): <i>Establishing and implementing action levels for releases to the environment from nuclear facilities</i>	Y	Y
	CNSC REGDOC-3.1.2 (2018): Reporting Requirements, Volume I: Non-Power Reactor Class I Facilities and Uranium Mines and Mills	Y	Y
	CNSC REGDOC-2.9.1 (2020): Environmental Protection: Environmental Principles, Assessments and Protection Measures, version 1.2**	Y	Y
Emergency Management and Fire Protection	CNSC REGDOC-2.10.1 (2016): Nuclear Emergency Preparedness and Response	Y	Y
	CSA N393-13 (R2018): <i>Fire Protection for facilities that process, handle or store nuclear substances</i>	Y	Y
	NRCC 56190 (2015): <i>National Building Code of Canada</i>	Y	Y
	NRCC 56192 (2015): <i>National Fire Code of Canada</i>	Y	Y

SCA	Document Title	Sufficient?	Adequate?
Waste Management	CSA N292.0-14 (2014): <i>General Principles for the Management of Radioactive Waste and Irradiated Fuel</i>	Y	Y
	CSA N292.3-14 (2014): <i>Management of Low- and Intermediate –level Radioactive Waste</i>	Y	Y
	CSA N294-09 (2019): <i>Decommissioning of Facilities Containing Nuclear Substances</i>	Y	Y
Security	CNSC REGDOC-2.12.3 (2020): Security of Nuclear Substances: Sealed Sources and Category I, II and III Nuclear Material, Version 2.1	Y	Y
Safeguards	CNSC REGDOC-2.13.1 (2018): Safeguards and Nuclear Material Accountancy	Y	Y

*Implementation by June, 2022.

**Implementation by October, 2021.

D. SAFETY AND CONTROL AREA FRAMEWORK

D.1 Safety and Control Areas Defined

The safety and control areas identified in section 2.2, and discussed in summary in sections 3.2 are comprised of specific areas of regulatory interest which vary between facility types.

The following table provides a high-level definition of each SCA.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	Safety and Control Area	Definition
Management	Management System	Covers the framework which establishes the processes and programs required to ensure an organization achieves its safety objectives and continuously monitors its performance against these objectives and fostering a healthy safety culture.
	Human Performance Management	Covers activities that enable effective human performance through the development and implementation of processes that ensure that licensee staff is sufficient in number in all relevant job areas and that licensee staff have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
	Operating Performance	This includes an overall review of the conduct of the licensed activities and the activities that enable effective performance.
Facility and Equipment	Safety Analysis	Maintenance of the safety analysis that supports that overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the effectiveness of preventative measures and strategies in reducing the effects of such hazards.
	Physical Design	Relates to activities that impact on the ability of systems, components and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account.
	Fitness for Service	Covers activities that impact on the physical condition of systems, components and structures to ensure that they 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.

SAFETY AND CONTROL AREA FRAMEWORK		
Functional Area	Safety and Control Area	Definition
Core Control Processes	Radiation Protection	Covers the implementation of a radiation protection program in accordance with the <i>Radiation Protection Regulations</i> . The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained ALARA.
	Conventional Health and Safety	Covers the implementation of a program to manage workplace safety hazards and to protect personnel and equipment.
	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.
	Emergency Management and Fire Protection	Covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. This also includes any results of exercise participation.
	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 to a separate waste management facility. Also covers the planning for decommissioning.
	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, in their licence, in orders, or in expectations for their facility or activity.
	Safeguards and Non-Proliferation	Covers the programs and activities required for the successful implementation of the obligations arising from the Canada/IAEA safeguards agreements as well as all other measures arising from the <i>Treaty on the Non-Proliferation of Nuclear Weapons</i> .
	Packaging and Transport	Programs that cover the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility.

D.2 Specific Areas for this Facility Type

The following table identifies the specific areas that comprise each SCA for CFM:

Functional Area	Safety and Control Area	Specific Areas
Management	Management System	<ul style="list-style-type: none"> ▪ Management System ▪ Organization ▪ Performance Assessment, Improvement and Management Review ▪ Change Management ▪ Safety Culture ▪ Records Management
	Human Performance Management	<ul style="list-style-type: none"> ▪ Human Performance Programs ▪ Personnel Training ▪ Work Organization and Job Design
	Operating Performance	<ul style="list-style-type: none"> ▪ Conduct of Licensed Activity ▪ Procedures ▪ Reporting and Trending
Facility and Equipment	Safety Analysis	<ul style="list-style-type: none"> ▪ Deterministic Safety Analysis ▪ Hazard Analysis ▪ Criticality Safety
	Physical Design	<ul style="list-style-type: none"> ▪ Design Governance ▪ Site Characterization ▪ Facility Design ▪ Structure Design ▪ System Design
	Fitness for Service	<ul style="list-style-type: none"> ▪ Equipment Fitness for Service/Equipment Performance ▪ Maintenance ▪ Ageing Management ▪ Periodic Inspection and Testing

Core Control Processes	Radiation Protection	<ul style="list-style-type: none"> ▪ Application of ALARA ▪ Worker Dose Control ▪ Radiation Protection Program Performance ▪ Radiological Hazard Control
	Conventional Health and Safety	<ul style="list-style-type: none"> ▪ Performance ▪ Practices ▪ Awareness
	Environmental Protection	<ul style="list-style-type: none"> ▪ Effluent and Emissions Control (releases) ▪ Environmental Management System (EMS) ▪ Assessment and Monitoring ▪ Protection of people ▪ Environmental Risk Assessment (ERA)
	Emergency Management and Fire Protection	<ul style="list-style-type: none"> ▪ Nuclear Emergency Preparedness and Response ▪ Fire Emergency Preparedness and Response ▪ Conventional emergency preparedness and response
	Waste Management	<ul style="list-style-type: none"> ▪ Waste Characterization ▪ Waste Minimization ▪ Waste Management Practices ▪ Decommissioning Plans
	Security	<ul style="list-style-type: none"> ▪ Facilities and Equipment ▪ Response Arrangements ▪ Security Practices ▪ Drills and exercises
	Safeguards and Non-Proliferation	<ul style="list-style-type: none"> ▪ Nuclear Material Accountancy and Control ▪ Access and Assistance to the IAEA ▪ Operational and Design Information ▪ Safeguards Equipment, Containment and Surveillance
	Packaging and Transport	<ul style="list-style-type: none"> ▪ Package Design and Maintenance ▪ Packaging and Transport

E. INSPECTIONS

The following table includes inspections conducted at CFM during the current licence period.

Inspection title	SCA(s) covered
NPFDCamecoCFM-2013-01-21	Human Performance Management, Radiation Protection, Environmental Protection, Conventional Health and Safety
NPFDCamecoCFM-2013-03-25	Environmental Protection, Conventional Health and Safety, Radiation Protection
NPFDCamecoCFM-2013-10-07	Management System
NPFDCamecoCFM-2013-10-21	Emergency Management and Fire Protection
NPFDCamecoCFM-2013-11-21	Security
NPFDCamecoCFM-2014-03-05	Waste Management
NPFDCFM-2014-05-30	Safety Analysis
NPFDCFM-2014-07-14	Radiation Protection
NPFDCFM-2015-06-03	Emergency Management and Fire Protection
NPFDCFM-2015-10-15	Packaging and Transport
NPFDCFM-2015-11-10	Security
NPFDCFM-2016-01-18	Radiation Protection
NPFDCFM-2016-06-14	Environmental Protection
CAMECO-CFM-2016-03	Emergency Management and Fire Protection
CAMECO-CFM-2017-01	Management System
CAMECO-CFM-2017-02	Human Performance Management
CAMECO-CFM-2017-03	Security
CAMECO-CFM-2017-04	Management System, Fitness for Service, Operating Performance, Radiation Protection, Environmental Protection, Conventional Health and Safety, Emergency Management and Fire Protection

Inspection title	SCA(s) covered
CAMECO-CFM-2018-01	Emergency Management and Fire Protection
CAMECO-CFM-2018-02	Waste Management, Conventional Health and Safety
CAMECO-CFM-2019-01	Management System
CAMECO-CFM-2019-02	Operating Performance, Fitness for Service, Conventional Health and Safety, Radiation Protection
CAMECO-CFM-2019-03	Emergency Management and Fire Protection
CAMECO-CFM-2020-01	Radiation Protection
CAMECO-CFM-2020-02	Security
CAMECO-CFM-2020-03	Fitness for Service
CAMECO-CFM-2021-01	Environmental Protection
CAMECO-CFM-2021-02	Human Performance Management

F. LICENCE CONDITIONS HANDBOOK UPDATES

The following table outlines the changes made to the CFM Licence Conditions Handbook during the current licence period.

Effective Date	Rev. #	Description of Changes
March 01, 2012	0	<ul style="list-style-type: none"> Original Document.
August 08, 2015	1	<ul style="list-style-type: none"> Updated to provide greater clarity on licensing basis and to incorporate written notification requirements. Incorporated licensee commitments with respect to the implementation of: <ul style="list-style-type: none"> CSA N288.4 (R2015): <i>Environmental Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills</i> CSA N288.5 (R2016): <i>Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills</i> CSA N288.6 (R2017): <i>Environmental Risk Assessments at Class I Nuclear Facilities and Uranium Mines and Mills</i> Made general formatting and edit changes to correct document titles, as appropriate and to improve readability.
August 20, 2020	2	<ul style="list-style-type: none"> Significant revision. Partially modernized LCH developed in conjunction with LCHs for Cameco's Blind River Refinery and Port Hope Conversion Facility. Improve consistency between LCH's for Cameco Fuel Services Division facilities. Restructured each SCA with Preamble, compliance verification criteria, and Guidance sections. Updated to current Licensing Basis publications (e.g., CSA standards, REGDOCs, codes, etc.). Updated licensee documents. Added reaffirmation year for CSA standards. Removed outdated/duplicated compliance verification criteria text that is covered by licensing basis publications (e.g., reporting requirements covered by REGDOC-3.1.2). Restructured and updated appendices. Included hyperlinks.

July 30, 2021	3	<ul style="list-style-type: none">• Updated to include revised environmental action levels and other recently implemented licensing basis documents.• Delegation of authority assignment reinserted into introductory section.
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PART TWO

Part Two provides all relevant information pertaining directly to the licence, including:

1. Any proposed changes to the conditions, licensing period, or formatting of an existing licence;
2. The proposed licence;
3. The proposed licence conditions handbook; and
4. The current licence.

PROPOSED LICENCE CHANGES

Overview

Cameco currently operates the CFM facility under a nuclear fuel facility operating licence, FFOL-3641.00/2022. The proposed licence is unchanged with the exception of release limits stipulated in Appendix A of the licence.

Licence Conditions

The proposed licence conditions are unchanged from Cameco's current licence for the CFM facility, and are therefore not fully consistent with the standardized conditions format which is now included in most CNSC licences. Although not fully consistent, differences are minor and do not result in any gaps in the current or proposed licensing basis as a result of not including the standardized conditions. If the Commission approves Cameco's application for this 1-year licence, Cameco will apply for a subsequent 10-year licence for the CFM facility. CNSC staff will propose a licence that incorporates the standardized licence conditions in association with the 10-year licence application.

Appendix A of the licence includes the release limits for the CFM facility and has been revised to include lower limits which were recently proposed by Cameco and reviewed by CNSC staff. These release limits will become effective immediately upon issuance of the licence.

Licence Format

No changes to the format are proposed for this licence.

Licence Period

Cameco has requested a renewal of its licence for a period of 1-year. Based on CNSC staff's review of Cameco's application, performance history, and supporting information, CNSC staff recommend the Commission approve Cameco's request for renewal of its licence for a 1-year period.

PROPOSED LICENCE

e-Doc 6597255 (WORD)

e-Doc 6625390 (PDF)



DRAFT

PDF Ref.: e-DOCS 6625390

Word Ref.: e-DOCS #6597255

File / Dossier: 2.02

NUCLEAR FUEL FACILITY LICENCE

CAMECO CORPORATION FUEL MANUFACTURING FACILITY

- I) LICENCE NUMBER:** FFL-3641.00/2023
- II) LICENSEE:** Pursuant to section 24 of the *Nuclear Safety and Control Act* this licence is issued to:
- Cameco Fuel Manufacturing Inc.**
200 Dorset Street East
Port Hope, Ontario
L1A 3V4
- III) LICENCE PERIOD:** This licence is valid from **01 March 2022** to **28 February 2023**, unless suspended, amended, revoked or replaced.
- IV) LICENSED ACTIVITIES:**
- This licence authorizes the licensee to:
- (i) operate its nuclear fuel facility for the production of nuclear fuel bundles from depleted, natural, and enriched uranium compounds, (hereinafter “the facility”) at 200 Dorset Street East, Port Hope, in the province of Ontario, as more particularly described in the Cameco Fuel Manufacturing Facility Licensed Area drawing 05C144 Rev 4 dated April 16, 2009;
 - (ii) possess, transfer, use, process, import, package, transport, manage store and dispose of the nuclear substances that are required for, associated with, or arise from the activities described in (i); and
 - (iii) possess and use prescribed equipment and prescribed information that are required for, associated with, or arise from the activities described in (i).
- V) EXPLANATORY NOTES:**
- (i) 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 associated Regulations.

- (ii) The content of any appendix attached to this licence forms part of the licence.
- (iii) The Licence Condition Handbook (LCH) for CAMECO FUEL MANUFACTURING INC. provides compliance verification criteria in order to meet the conditions listed in the 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 licensing basis described in the LCH, unless otherwise permitted in this licence.
- 1.2 Changes to the 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.
- 1.3 Changes that are outside of the licence conditions are not permitted without the prior written approval of the Canadian Nuclear Safety Commission (hereinafter “the Commission”).
- 1.4 The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes or standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission.

2. Management System

- 2.1 The licensee shall implement and maintain a management system for the facility.
- 2.2 The licensee shall prepare an annual compliance and performance report.
- 2.3 The licensee shall prepare a quarterly compliance report for each calendar quarter.
- 2.4 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, and routine reports on the results of monitoring programs. The process shall define the frequency of the routine reports.
- 2.5 Where any release limit stipulated in Appendix A to this licence is exceeded, the licensee shall:
 - (a) notify the Commission, Environment Canada, the Ontario Ministry of the Environment and the Municipality of Port Hope within 24 hours of detecting the event;
 - (b) investigate the cause and the circumstances; and
 - (c) within a time approved by the Commission take corrective action to comply with the release limit stipulated in Appendix A to this licence.
- 2.6 The licensee shall implement and maintain a public information program for the facility, including a public disclosure protocol.

2.7 The licensee shall give written notification of any changes to the management system program document prepared to meet condition 2.1.

3. Human Performance Management

3.1 The licensee shall implement and maintain a program for training staff for the facility.

4. Operating Performance

4.1 The licensee shall implement and maintain a program for the safe operation of the facility.

4.2 The operating program shall provide direction for safely operating the facilities and shall reflect the safety analysis referred to in condition 5.1.

4.3 The licensee shall establish and maintain, in addition to any record required to be maintained pursuant to the *Nuclear Safety and Control Act* and its Regulations, full and accurate records to show:

- a) the acquisition of nuclear substances including the quantity received, the form of the substance, and the name of the vendor;
- b) the inventory of all nuclear substances at the facility; and
- c) the disposition of all nuclear substances 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 nuclear substance, and the date of shipment.

4.4 The licensee shall implement and maintain a pressure boundary program for the facility.

4.5 The licensee shall have a formal agreement with an Authorized Inspection Agency, designated by the Commission as authorized to register, pressure boundary designs and procedures, perform inspections, and perform other applicable functions at the licensed facility.

5. Safety Analysis

5.1 The licensee shall implement and maintain a safety analysis for the facility.

5.2 The licensee shall ensure that all operations with fissionable materials will be carried out in accordance with the requirements set out in the CNSC document RD 327 Nuclear Criticality Safety.

6. Physical Design

6.1 The licensee shall implement and maintain a program for physical design for the facility.

6.2 The licensee shall not make any change to the design of, or equipment at the facility, that would introduce hazards different in nature or greater in probability than those considered by the safety analysis, without the prior written approval of the Commission or a person authorized by the Commission.

7. Fitness for Service

- 7.1 The licensee shall implement and maintain a program for maintenance for the facility.
- 7.2 The licensee shall implement and maintain a program for periodic inspection and testing for the facility.

8. Radiation Protection

- 8.1 The licensee shall implement and maintain a radiation protection program.
- 8.2 The licensee shall notify the Commission or a person authorized by the Commission within 24 hours of becoming aware that an action level has been exceeded and shall file a written report within 45 working days of becoming aware of the matter.

9. Conventional Health and Safety

- 9.1 The licensee shall implement and maintain an occupational health and safety program for the facility.

10. Environmental Protection

- 10.1 The licensee shall implement and maintain an environmental protection program for the facility.
- 10.2 The licensee shall control, monitor and record releases of nuclear substances to the environment from the facility such that the releases do not exceed the release limits specified in Appendix A.
- 10.3 The licensee shall control and monitor and record the releases of hazardous substances.
- 10.4 The licensee shall notify the Commission within 24 hours of becoming aware that an action level has been reached (or exceeded) and shall file a written report within 45 working days of becoming aware of the matter.

11. Emergency Management and Fire Protection

- 11.1 The licensee shall implement and maintain a program for emergency preparedness to address on-site and off-site events which can affect the facility.
- 11.2 The licensee shall implement and maintain a program for fire protection for the facility.

12. Waste Management

- 12.1 The licensee shall implement and maintain a program for waste management for the facility.
- 12.2 The licensee shall maintain a preliminary decommissioning plan (PDP) for decommissioning the facility. This PDP shall be reviewed every five years or when requested by the Commission, or a person authorized by the Commission.

13. Security

13.1 The licensee shall implement and maintain a program for nuclear security at the facility.

14. Safeguards and Non-Proliferation

14.1 The licensee shall implement and maintain a safeguards program and undertake all measures required to ensure safeguards implementation at the facility.

14.2 The licensee shall not make changes to operations, equipment or procedures that would affect the implementation of safeguards measures, except with the prior written approval of the Commission, or a person authorized by the Commission.

15. Packaging and Transport

15.1 The licensee shall implement and maintain a program for the facility for the receipt, packaging and transport of nuclear and hazardous substances.

16. Facility-Specific

16.1 Financial Guarantee

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

16.2 Nuclear Liability Insurance

The licensee shall maintain nuclear installation liability insurance.

SIGNED at OTTAWA, this **X**th day of February, 2022.

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

APPENDIX A
RELEASE LIMITS

Liquid Releases:

Release Source	Substance	Licence Limit	Frequency and Averaging Period
Releases to sewer	Uranium	1.7 mg/L	Twice Weekly, Composite Discharge

Air Releases:

Release Source	Substance	Licence Limit	Averaging Period
Process stacks and building ventilation emissions	Uranium	10.5 kg	Annual

PROPOSED LICENCE CONDITIONS HANDBOOK

e-Doc 6597178 (WORD)

e-Doc 6625396 (PDF)

DRAFT

Canada's Nuclear Regulator



e-Doc 6597178 (Word)
e-Doc 6625396 (PDF)

LICENCE CONDITIONS HANDBOOK

CAMECO FUEL MANUFACTURING

Nuclear Fuel Facility Operating Licence

FFL-3641.00/2023

Revision 0



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada

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Licence Conditions Handbook

Effective: March 01, 2022

LCH-FFL-3641.00/2023

Cameco Fuel Manufacturing

Licence Type

FFL-3641.00/2023

SIGNED at OTTAWA this Xth day of February 2022

Andrew McAllister, Director

Nuclear Processing Facilities Division

Directorate of Nuclear Cycle and Facilities Regulation

CANADIAN NUCLEAR SAFETY COMMISSION

REVISION HISTORY:

Effective Date	Rev. #	LCH e-Doc #	Section(s) changed	Description of Changes
March 01, 2022	0	6597178	N/A	Original Document

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INTRODUCTION

The general 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 performs the licensed activities at the Cameco Fuel Manufacturing facility (CFM) in accordance with the licensing basis for CFM and the intent of the CFM licence. 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, as needed, the regulatory context, background and/or history related to the LC. CVC are criteria used by Canadian Nuclear Safety Commission (CNSC) staff to verify and oversee compliance with the LC. Guidance is non-mandatory information, on how the licensee may comply with the LC.

Throughout the licence, the statement “a person authorized by the Commission” reflects to whom the Commission may delegate certain authority (hence “consent”) to CNSC staff. Unless otherwise indicated in the CVC of specific LCs in this LCH, the delegation of authority by the Commission to act as a “person authorized by the Commission” is only applied to the incumbents of the following positions (source: Record of Decision for licence renewal issued February 28, 2012):

- Director, Nuclear Processing Facilities Division (NPF);
- Director General, Directorate of Nuclear Cycle and Facilities Regulation (DNCFR); and
- Executive Vice-President and Chief Regulatory Operations Officer, Regulatory Operations Branch

The documents referenced in the LCH by e-Access numbers are not publicly available. The links provided in the LCH are references to the internal CNSC electronic filing system, and those documents cannot be accessed from outside of the CNSC network.

Current versions of the licensing basis publications, licensee documents that require notification of change and guidance documents referenced in the LCH are tracked in the document *CFM-Written Notification Table (for licence FFL-3641.00/2022)* (e-Doc 4685980). This document is controlled by the Nuclear Processing Facilities Division and is available to the licensee upon request.

Most CNSC documents referenced in the LCH are available through the [CNSC website](#). Documents listed on CNSC website may contain prescribed information as defined by the [General Nuclear Safety and Control Regulations](#) (GNSCR). Information in these documents will be made available only to stakeholders with appropriate security clearance with a valid need to know.

The licensee documents referenced in the LCH are not publicly available; they contain proprietary information or prescribed information as defined by the GNSCR. The CNSC is required to protect the information under its control as per the [Access to Information Act](#). As such, if a request for a Cameco document were received, CNSC staff would consult with Cameco for their direction on the release of any information, per the law.

Domestic and international standards (in particular consensus standards produced by the CSA Group) are an important component of the CNSC's regulatory framework. Standards support the regulatory requirements established through the [Nuclear Safety and Control Act](#) (NSCA), its regulations and licences by setting out the necessary elements for acceptable design and performance at a regulated facility or a regulated activity. Standards are one of the tools used by the CNSC to evaluate whether licensees are qualified to carry out licensed activities.

The CNSC offers complimentary access to the [CSA Group suite of nuclear standards](#) through the CNSC website. This access platform allows interested stakeholders to view these standards online through any device that can access the Internet. Standards applicable to the licensees are documented in the CVC or guidance as appropriate.

This LCH has 2 appendices:

- Appendix A: which provides definitions of terms and a list of acronyms used throughout the LCH.
- Appendix B: which provides lists of all documents referenced in the LCH

This licence authorizes the licensee to:

- (i) operate its nuclear fuel facility for the production of nuclear fuel bundles from depleted, natural, and enriched uranium compounds, (hereinafter “the facility”) at 200 Dorset Street East, Port Hope, in the province of Ontario, as more particularly described in the Cameco Fuel Manufacturing Facility Licensed Area drawing 05C144 Rev 4 dated April 16, 2009;
- (ii) possess, transfer, use, process, import, package, transport, manage store and dispose of the nuclear substances that are required for, associated with, or arise from the activities described in (i); and
- (iii) possess and use prescribed equipment and prescribed information that are required for, associated with, or arise from the activities described in (i).

Cameco is authorized to operate the facility. The facility is located in the Municipality of the Town of Port Hope, Ontario. The plant layout drawings that describe the facility are written notification documents found under LC 6.1.

GENERAL

Licence Condition 1.1: Licensing Basis

The licensee shall conduct the activities described in Part IV of this licence in accordance with the licensing basis described in the LCH, unless otherwise permitted in this licence.

Preamble

The licensing basis is 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;

The licensing basis sets the boundary conditions for acceptable performance at a regulated facility or activity, and thus establishes the basis for the CNSC compliance program with respect of that regulated facility or activity. The degree to which the regulatory requirements are applied to Cameco facilities and activities will be in a graded manner commensurate with risk. With a graded approach, all requirements apply but to varying degrees depending upon the safety significance and complexity of the work being performed.

Where the LC requires the licensee to implement and maintain a particular program, the licensee documents that describe how these safety and control area requirements are implemented at the facility are part of the licensing basis.

Compliance Verification Criteria

Regulatory Role of the Licensing Basis

The licensing basis is established when the Commission renders its decision regarding the licence application. LC 1.1 requires the licensee to conduct the licensed activities in accordance with the licensing basis. For activities that are not in accordance with the licensing basis, the licensee shall take action as soon as practicable to return to a state consistent with the licensing basis, taking into account the risk significance of the situation.

The licensing basis is not intended to unduly inhibit the ongoing management and operation of the facility or the licensee's ability to adapt to changing circumstances and continuously improve, in accordance with its management system.

Part (i) of the Licensing Basis

Part (i) of the licensing basis refers to applicable laws and regulations. There are many federal and provincial acts and regulations, and international laws, agreements, guidelines, etc., applicable to activities performed at CFM.

The laws, regulations and international agreements for which CNSC has a regulatory role include:

- [*Nuclear Safety and Control Act*](#) (NSCA) and its Regulations;
- [*Impact Assessment Act*](#) and its Regulations;
- [*Canadian Environment Protection Act*](#);
- [*Nuclear Liability and Compensation Act*](#);
- [*Transportation of Dangerous Goods Act*](#) and its Regulations;
- [*Radiation Emitting Devices Act*](#);
- [*Access to Information Act*](#);
- [*Canada/IAEA Safeguards Agreements*](#);
- *Canada Labour Code, Part II*;
- *Ontario Ministry of the Environment, Conservation and Parks Acts and Regulations*; and
- *Environment and Climate Change Canada Acts and Regulations*.

Part (ii) of the Licensing Basis

Part (ii) of the licensing basis refers to the conditions and the safety and control measures included in the licence and in the documents directly referenced in the licence.

The licence requires the licensee to implement and maintain certain programs. There are no documents directly referenced in the CFM licence. For the purpose of licence requirement, a program may be a series of documented, coordinated activities, not necessarily a single document.

Part (iii) of the Licensing Basis

Part (iii) of the licensing basis consists of the safety and control measures described in the licence application and in the documents in support of that licence application. The safety and control measures include important aspects of that documentation, as well as important aspects of analysis, design, operation, etc. They may be found in high-level, programmatic licensee documents but might also be found in lower-level, supporting licensee documentation. LC 1.1 requires the licensee to conform to, and/or implement, all these safety and control measures.

Part (iii) of the licensing basis also includes the safety and control measures in the standards, codes and CNSC regulatory documents referenced in the application or in the licensee's supporting documentation. Note, however, this does not mean that all details in these referenced documents are part of the licensing basis; some of these documents may contain administrative, informative or guidance sections that are not considered to be part of the licensing basis.

Applicable licensee documents are listed in the LCH under the heading “Licensee Documents that Require Notification of Change”. Applicable CNSC regulatory documents, CSA standards and other documents are listed in the LCH under the heading “Licensing Basis Publications”. The documents listed in the LCH could cite other documents that also contain safety and control measures. Applicable licensing basis publications are listed in tables in this LCH 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 also explained under the most relevant LC.

Details that are not directly relevant to safety and control measures for facilities or activities authorized by the licence are excluded from the licensing basis. Details that are relevant to a different safety and control area (i.e., not the one associated with the main document), are only part of the licensing basis to the extent they are consistent with the main requirements for both safety and control areas.

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.

CNSC Staff’s Approach to Assessing the Licensing Basis for CFM

In accordance with LC 1.2, Cameco will submit relevant documentation for CNSC staff review regarding proposed changes to the facility or its operation, including deviation from design, operating conditions, policies, programs and methods referred to in the licensing basis. This includes, but is not limited to changes to equipment, processes, supporting activities, specific licensee documentation or any other item considered a safety or control measure under the licensing basis. There are specific licensee documents listed in the LCH, which require written notification every time a new version of the document is approved by Cameco. CNSC staff will review the information submitted by Cameco to confirm Cameco’s assessment that the proposed change remains within the licensing basis. CNSC staff assess a proposed change as being within the licensing basis based on changes or impact on the overall safety at the CFM. Cameco may proceed with the proposed initiatives if they are found to be within the licensing basis.

Any proposed activity, facility or other change, which CNSC staff consider to be outside the licensing basis, will be discussed with Cameco and should Cameco choose to proceed with the change, CNSC staff will submit the matter to the Commission for consideration. If the Commission grants approval to the change, it will become part of the licensing basis for CFM and reflected in updates to the LCH as appropriate.

Licence Application

Submission Date	Document Title	e-Doc
April 15, 2011	Application for Renewal of Fuel Facility Operating Licence (FFOL-3641.02/2012) for a 10-year term	3711490 (cover letter) 3711493 (application)

Guidance

Guidance Documents

Document Number	Document Title	Version
REGDOC- 3.5.3	Regulatory Fundamentals	2018

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 1.2.

Licence Conditions 1.2, 1.3 and 1.4: Notification of Changes, Changes that Require Commission Approval, and In the Event of any Conflict or Inconsistency

1.2 Changes to the 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.

1.3 Changes that are outside of the licence conditions are not permitted without the prior written approval of the Canadian Nuclear Safety Commission (hereinafter “the Commission”).

1.4 The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes or standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission.

Preamble

CNSC staff tracks the version history of licensee documents that require written notification of change in: *Cameco Fuel Manufacturing Written Notification Documents Tracking Sheet (Licence FFL-3641.00/2022)* (e-Doc [4685980](#)) (with the exception of security-related documents).

The objective of the licensing basis, as defined in the LCH under LC 1.1, is to set the boundary conditions for acceptable performance at the facility. The licensee is encouraged to make continuous improvements to their programs and documents throughout the licensing period as long as they remain within the licensing basis authorized by the Commission.

Compliance Verification Criteria

Written notification is a physical or electronic communication from a person authorized to act on behalf of the licensee to the CNSC.

Under the licensee’s management system, a change control process requires justifying changes and the review of changes by relevant stakeholders. Proposed changes with the potential to negatively impact designs, operating conditions, policies, programs, methods, or other elements that are integral to the licensing basis, are documented and written notification of the change shall be provided to the CNSC. Written notifications shall include a summary description of the change, the rationale for the change, expected duration (if not a permanent change), and a summary explanation of how the licensee has concluded that the change remains in accordance with the licensing basis (e.g., an evaluation of the impact on health, safety, security, the environment and Canada’s international obligations). A copy of the revised document shall accompany the notification. All written notifications shall be transmitted to CNSC per established communications protocols.

Many changes for which the licensee shall notify the CNSC are captured as changes to licensee documents under part (iii) of the licensing basis. The LCH identifies specific documents that require written notification under the most relevant LC. However, other documents identified in the application or in the licensee’s supporting documentation may require notification of change if they describe safety and control measures applicable to the licensing basis. For example, if a licensee document in the CVC refers to another document, including a third-party document, without citing the revision # of that document, if that document changes and the licensee uses the revised version, the licensee shall determine if it is necessary to notify the CNSC of the change.

The documents needed to support the licence application may include documents produced by third parties (e.g., reports prepared by third party contractors). Changes to these documents require written notification to the CNSC only if the new version continues to form part of the licensing basis. That is, if the licensee implements a new version of a document prepared by a third party, it shall inform the CNSC of the change(s), per LC 1.2. On the other hand, if a third party has updated a certain document, but the licensee has not adopted the new version as part of its safety and control measures, the licensee is not required to inform the CNSC that the third party has changed the document.

Licensee documents listed in the LCH are subdivided into categories having different requirements for notifying the CNSC of potential changes:

Notification Category for Licensee Documents Listed in the LCH

Category	Definition
PN	Prior Notification - The licensee shall submit the notice to the CNSC prior to implementing the change; typically, the requirement is to submit the proposed changes 30 days prior to planned implementation; however 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
NT	Notification – The licensee shall submit the notice at the time of making the change

Notification of some proposed changes (i.e., engineered physical changes, new processes/activities for the facility) may not be best captured through an update to a licensee document. In these cases, a standalone submission may be made that includes the summary description of the change, the rationale for the change, expected duration (if not a permanent change), and a summary explanation of how the licensee has concluded that the change remains in accordance with the licensing basis.

Changes that are not clearly in the safe direction require further assessment of impact to determine if Commission approval is required in accordance with LC 1.1.

Guidance

For proposed changes that would not be in accordance with the licensing basis, the guidance for LC 1.1 applies.

SCA – MANAGEMENT SYSTEM

Licence Condition 2.1 and 2.7: Management System and Changes to Management System Program

2.1 The licensee shall implement and maintain a management system for the facility.

2.7 The licensee shall give written notification of any changes to the management system program document prepared to meet condition 2.1.

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information on the proposed quality assurance program for the activity to be licensed, including the measures to promote and support safety culture.

The GNSCR require that a licence application contain the applicant’s organizational management structure, including the internal allocation of functions, responsibilities and authority.

CSA N286, *Management system requirements for nuclear facilities*, contains the requirements for a management system throughout the life cycle of a nuclear facility and extends to all safety and control areas.

CSA N286.0.1, *Commentary on N286-12, Management system requirements for nuclear facilities*, provides background information concerning certain clauses and requirements in CSA N286. This background information can help the user clarify the context of the CSA N286 requirements.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
CSA N286	Management system requirements for nuclear facilities*	2012 (R2017)
REGDOC- 2.1.2**	Safety Culture	2018

*This document is applicable to all LCs.

** REGDOC-2.1.2 is to be implemented by June 1, 2022.

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
CFM-MS	Management System Program Manual*	PN
FLM	Facility Licensing Manual*	PN
MSP 13-02	Change Control	NT

*This document is applicable to all LCs.

Guidance

Guidance Documents

Document Number	Document Title	Version
CSA N286.01	Commentary on N286-12, Management systems requirements for nuclear facilities	2021
REGDOC-2.1.1	Management System	2019

Licence Condition 2.2, 2.3, 2.4 and 2.5: Annual Compliance and Performance Report, Quarterly Compliance Report, Reporting Requirements and Exceedance of Release Limit

2.2 The licensee shall prepare an annual compliance and performance report.

2.3 The licensee shall prepare a quarterly compliance report for each calendar quarter.

2.4 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, and routine reports on the results of monitoring programs. The process shall define the frequency of the routine reports.

2.5 Where any release limit stipulated in Appendix A to this licence is exceeded, the licensee shall:

- (a) notify the Commission, Environment Canada, the Ontario Ministry of the Environment and the Municipality of Port Hope within 24 hours of detecting the event;
- (b) investigate the cause and the circumstances; and
- (c) within a time approved by the Commission take corrective action to comply with the release limit stipulated in Appendix A to this licence.

Preamble

These LCs require the licensee to implement and maintain a program for reporting information to the Commission. This includes compliance monitoring and operational performance, responses to unusual events, and notifications of various types.

The NSCA and its applicable regulations describe reporting to the Commission or a person authorized by the Commission. Reporting requirements are found in sections 29 – 32 of the GNSCR and section 27 of the NSCA.

Compliance Verification Criteria

Licensing Basis Publications

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

The annual compliance report and performance report covering the period January 1 to December 31 shall be submitted to CNSC staff by March 31 each year.

In addition to the requirements outlined in REGDOC-3.1.2, Cameco is also required to submit annually, a review of groundwater and surface water.

The licensee shall submit a quarterly compliance report within eight weeks of the end of each quarter, covering the following areas:

- Facility operations;
- Conventional health and safety;
- Radiation protection monitoring data;
- Environmental protection monitoring data; and
- Public information program summary.

Guidance

None provided.

Licence Condition 2.6: Public Information and Disclosure Program

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

Preamble

The [Class I Nuclear Facilities Regulations](#) require that an application for a licence contain the proposed program to inform persons living in the vicinity of the site of the general nature and characteristics of the anticipated effects on the environment and the health and safety of persons that may result from the activity to be licensed.

The primary goal of a public information and disclosure program is to ensure that information related to the health, safety and security of persons and the environment, and other issues associated with the lifecycle of the nuclear facilities are effectively communicated to the public. In addition, the program shall include a commitment to a disclosure protocol for ongoing, timely communication of information related to the licensed facility during the course of the licence period.

This LC requires the licensee to implement and maintain a public information and disclosure program to improve the public's level of understanding about Cameco's facilities and activities.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC- 3.2.1	Public Information and Disclosure	2018

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
PIP	Public Information Program	NT

Guidance

None provided.

SCA – HUMAN PERFORMANCE MANAGEMENT – TRAINING

Licence Condition 3.1: Training Program

The licensee shall implement and maintain a program for training staff for the facility.

Preamble

This LC requires the licensee to develop and implement training programs for workers. It also provides the requirements regarding the program and processes necessary to support responsibilities, qualifications and requalification training of persons at the nuclear facility.

As defined by the GNSCR, a worker is a person who performs work that is referred to in a licence. This includes contractors and temporary employees. Training requirements apply equally to these types of workers as to the licensee’s own employees. The GNSCR require that licensees ensure that there are a sufficient number of properly trained and qualified workers to safely conduct the licensed activities.

The [Class I Nuclear Facilities Regulations](#) require that licence applications include the proposed responsibilities of and qualification requirements and training program for workers, including the procedures for the requalification of workers; and the results that have been achieved in implementing the program for recruiting, training and qualifying workers in respect of the operation and maintenance of the nuclear facility.

The [Class I Nuclear Facilities Regulations](#) require every licensee to keep a record of the status of each worker’s qualifications, requalification and training, including the results of all tests and examinations completed in accordance with the licence.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC-2.2.2	Personnel Training, Version 2	2016

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
CFM-HR-01	Systematic Approach to Training Program	PN

Guidance

Guidance Documents

Document Number	Document Title	Version
REGDOC-2.2.5	Minimum Staff Complement	2019

SCA – OPERATING PERFORMANCE

Licence Conditions 4.1, 4.2 and 4.3: Operating Program and Records

- 4.1 The licensee shall implement and maintain a program for the safe operation of the facility.**
- 4.2 The operating program shall provide direction for safely operating the facilities and shall reflect the safety analysis referred to in condition 5.1.**
- 4.3 The licensee shall establish and maintain, in addition to any record required to be maintained pursuant to the *Nuclear Safety and Control Act* and its Regulations, full and accurate records to show:**
- (a) the acquisition of nuclear substances including the quantity received, the form of the substance, and the name of the vendor**
 - (b) the inventory of all nuclear substances at the facility; and**
 - (c) the disposition of all nuclear substances 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 nuclear substance, and the date of shipment.**

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain the following information: the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility. The [Nuclear Substances and Radiation Devices Regulations](#) have requirements for records to be kept and retained for nuclear substances.

An operating program includes an up-to-date set of operating limits for the facility and activities authorized under the licence, including: production limits and limits for the possession, use, management, transfer, storage of nuclear substances, and an inventory of nuclear substances possessed under the licensees’ operating licence.

Compliance Verification Criteria

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
CFM-EP	Environmental Protection Program	PN
CFM-RP	Radiation Protection Program Manual	PN
HSI-048	Sealed Source	PN

Nuclear Substances and Radiation Device

The licensee shall ensure the sealed sources are controlled (by maintaining an inventory of sealed sources, and tracking and reporting their transfer) in order to achieve the objectives of REGDOC-2.12.3 *Security of Nuclear Substances: Sealed Sources*.

The licensee shall notify CNSC staff prior to possessing sources with aggregate activity levels which meet or exceed Category 3 sources as defined in REGDOC 2.12.3.

Annual Production Limits for the facility

The annual production for the facility shall not exceed the following limits:

- 125 Megagrams (Mg) of UO₂ as pellets during any calendar month
- The facility may possess natural, depleted and enriched uranium compounds for the purposes and under the conditions, stipulated in the licence.

Guidance

None provided.

Licence Conditions 4.4 and 4.5: Pressure Boundary Program and Authorized Inspection Agency Agreement

4.4 The licensee shall implement and maintain a pressure boundary program for the facility.

4.5 The licensee shall have a formal agreement with an Authorized Inspection Agency, designated by the Commission as authorized to register, pressure boundary designs and procedures, perform inspections, and perform other applicable functions at the licensed facility.

Preamble

A pressure boundary is a boundary of any pressure retaining vessel, system or component of a nuclear or non-nuclear system, where the vessel, system or component is registered or eligible for registration. This LC provides regulatory oversight with regards to the licensee's implementation of a pressure boundary program and holds the licensee responsible for all aspects of pressure boundary registration and inspections. A pressure boundary program is comprised of processes and procedures and associated controls that are required to ensure compliance with the requirements set out in CSA B51, *Boiler, pressure vessel, and pressure piping code*.

This LC also ensures that an Authorized Inspection Agency (AIA) will be subcontracted directly by the licensee. An AIA is an organization recognized by the CNSC as authorized to register designs and procedures, perform inspections, and other functions and activities as defined by CSA B51 and its applicable referenced publications.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Revision
CSA B51	Boiler Pressure Vessel and Pressure Piping Code	2019

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
N/A	Authorized Inspection Agency Services Agreement	NT*
MSP 27-16	Pressure Retaining Components	NT

* Termination of the agreement is considered a change that requires prior notification to CNSC.

Formal Agreement with an Authorized Inspection Agency

The licensee shall always have a valid AIA agreement, and shall adhere to the following:

- (a) The licensee shall arrange for the AIA inspectors to have access to all areas of Cameco's facilities and records, and to the facilities and records of CFM's pressure boundary contractors and material organizations, as necessary for the purposes of performing inspections and other activities required by the standards;
- (b) The licensee shall provide the inspectors of the AIA with: information, reasonable advance notice and time necessary to plan and perform inspections and other activities required by the standards;

Where a variance or deviation from the standard exists, the licensee shall submit the proposed resolution to the AIA for evaluation; and

- (c) Design registration services shall be provided by an AIA legally entitled under the applicable provincial boilers and pressure vessels acts and regulations to register designs in the province of installation.

The licensee shall obtain AIA acceptance for implementation of the licensee's programs and procedures for:

- (d) calibration, repair and maintenance of overpressure protection devices;
- (e) repair and maintenance of mechanical joints; and
- (f) periodic inspection of boilers and pressure vessels designed according to CSA B51.

The licensee shall provide a copy of the signed AIA agreement to the CNSC. The licensee shall notify the CNSC in writing of any change to the terms and conditions of the agreement, including termination of the Agreement.

For safety significant systems or components, the licensee shall submit a preliminary report immediately, and submit a full report within 21 days on the following:

- A pressure boundary failure, deformation, degradation or leak; and
- The degradation of an over-pressure protection device for the pressure boundary that prevented, or could have prevented, the proper functioning of that device.

Guidance

None provided.

SCA – SAFETY ANALYSIS

Licence Condition 5.1: Safety Analysis Program

The licensee shall implement and maintain a safety analysis for the facility.

Preamble

The GNSCR require that a licence application contains information that includes a description and the results of any test, analysis or calculation performed to substantiate the information included in the application. The [Class I Nuclear Facilities Regulations](#) require that a licence application contains information that includes a final safety analysis report demonstrating the adequacy of the design of the nuclear facility, and the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility.

The implementation and maintenance of a safety analysis program includes a process to identify and assess hazards and risks on an ongoing basis. This includes 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.

Compliance Verification Criteria

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
N/A	Safety Analysis Report for Cameco Fuel Manufacturing Inc. (Port Hope Facility)	PN

The licensee shall maintain the safety analysis report to ensure it adequately considers the hazards associated with the facility. The safety analysis shall be a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and consider the effectiveness of preventative measures and strategies in reducing the effects of such hazards.

The licensee shall establish and maintain a process to periodically review and revise existing risk assessments to ensure, at a minimum of every five years, new risks and lessons learned are incorporated into an updated safety analysis report. This report shall be provided to CNSC staff for review.

Guidance

The licensee should establish and maintain one or more safety committees at the facility to periodically assess safety issues related to the operation and modification of the facility. These committees should have among their membership the necessary breadth of knowledge and experience to conduct these assessments. The results of these assessments should feed into the safety analysis report.

Guidance Documents

Document Number	Document Title	Version
IAEA SSR-4	Safety of Nuclear Fuel Cycle Facilities	2017

Licence Condition 5.2: Operations with Enriched Uranium

The licensee shall ensure that all operations with fissionable materials will be carried out in accordance with the requirements set out in the CNSC document RD 327 Nuclear Criticality Safety.

Preamble

The licence authorizes the licensee to carry out certain activities with respect to enriched uranium.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC-2.4.3	Nuclear Criticality Safety	2019

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
NCSPM	Nuclear Criticality Safety Program Manual	PN

CFM shall seek approval from CNSC staff before possessing enriched uranium in a quantity above 0.8 smallest critical mass. CNSC staff will review and accept any revised safety analysis and/or criticality monitoring program before providing approval.

Guidance

None provided.

SCA – PHYSICAL DESIGN

Licence Conditions 6.1 and 6.2: Physical Design Program and Design Change Control

- 6.1 The licensee shall implement and maintain a program for physical design for the facility.**
- 6.2 The licensee shall not make any change to the design of, or equipment at the facility, that would introduce hazards different in nature or greater in probability than those considered by the safety analysis, without the prior written approval of the Commission or a person authorized by the Commission.**

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain the proposed measures, policies, methods and procedures to maintain the nuclear facility. The [Class I Nuclear Facilities Regulations](#) require that a licence application contain a description of the structures, systems and equipment, including the relevant design information for the facility.

A design program ensures that the design of the facility is managed using a well-defined systematic approach. LC 6.1 requires that the licensee implement and maintain a design program to confirm that safety-related systems, structures and components (SSCs) and any modifications to them continue to meet their design basis given new information arising over time and taking changes in the external environment into account. It also confirms that SSCs continue to be able to perform their safety functions.

LC 6.1 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.

CSA N393, *Fire protection for facilities that process, handle, or store nuclear substances*, provides the minimum fire protection requirements for the design, construction, commissioning, operation, and decommissioning of facilities which process, handle, or store nuclear substances, and other hazardous substances that directly relate to the nuclear substances being regulated.

The *National Fire Code of Canada 2015* sets out technical provisions regulating:

- (a) activities related to the construction, use or demolition of buildings and facilities;
- (b) the condition of specific elements of buildings and facilities;
- (c) the design or construction of specific elements of facilities related to certain hazards; and
- (d) protection measures for the current or intended use of buildings.

The *National Building Code of Canada 2015*, sets out technical provisions for the design and construction of new buildings. It also applies to the alteration, change of use and demolition of existing buildings.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
NRCC 56190	National Building Code of Canada 2015	2015
NRCC 56192	National Fire Code of Canada 2015	2015
CSA N393	Fire protection for facilities that process, handle, or store nuclear substances	2013 (R2018)

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
MSP 13-02	Change Control	NT
05C144	Facility Licenced Area	PN
00A084	Site Map Property Layout	PN

Guidance

Guidance Documents

Document Number	Document Title	Version
REGDOC 2.5.1	General Design Considerations: Human Factors	2019

SCA – FITNESS FOR SERVICE

Licence Conditions 7.1 and 7.2: Maintenance Program and Periodic Inspection and Testing Program

- 7.1 The licensee shall implement and maintain a program for maintenance for the facility.**
- 7.2 The licensee shall implement and maintain a program for periodic inspection and testing for the facility.**

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information including the proposed measures, policies, methods and procedures for operating and maintaining the nuclear facility. 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

Licensing Basis Publications

Document Number	Document Title	Version
CSA N393	Fire Protection for Facilities that Process, Handle or Store Nuclear Substances	2013 (R2018)
NRCC 56192	National Fire Code of Canada	2015

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
AP 018	Preventative Maintenance Execution Management	NT

Guidance

None provided.

SCA – RADIATION PROTECTION

Licence Condition 8.1 and 8.2: Radiation Protection Program and Action Level Exceedance

- 8.1 The licensee shall implement and maintain a radiation protection program.**
- 8.2 The licensee shall notify the Commission or a person authorized by the Commission within 24 hours of becoming aware that an action level has been exceeded and shall file a written report within 45 working days of becoming aware of the matter.**

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 any 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 shall 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](#).

Action levels (ALs) are designed to alert licensees before regulatory dose limits are reached. By definition, if an AL is reached, a loss of control of some part of the associated radiation protection program may have occurred, and specific action is required, as defined in the [Radiation Protection Regulations](#). ALs are not intended to be static and are to reflect operating conditions in the facility.

Compliance Verification Criteria

Licensing Basis Publications

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

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
CFM-RP	Radiation Protection Program Manual	PN

ALs for radiation protection are outlined below. In the event of a discrepancy between the table and the licensee documentation upon which they are based, the licensee documentation shall be considered the authoritative source considering that the licensee has followed its own change control process.

Radiation Protection Action Levels

Parameter	Period	Action Level
Whole body dose	Monthly Nuclear Energy Worker	1.6 mSv
	Quarterly Nuclear Energy Worker	1.0 mSv
	Quarterly Non-Nuclear Energy Worker	0.2 mSv
Skin dose	Monthly Nuclear Energy Worker	20.0 mSv
	Quarterly Nuclear Energy Worker	5.0 mSv
	Quarterly Non-Nuclear Energy Worker	2.0 mSv
Extremity Dose	Quarterly Nuclear Energy Worker	55.0 mSv
Urine Analysis	Bi-Weekly Urine Sample Nuclear Energy Worker	10 µg U/L
Lung Counting	Annually Nuclear Energy Worker	5 mSv

The licensee shall review and, if necessary, revise the ALs specified above at least once every five years in order to validate their effectiveness. The results of such reviews shall be provided to CNSC staff.

Guidance

Guidance Documents

Document Number	Document Title	Version
G-129	Keeping Radiation Exposures and Doses “As Low as Reasonably Achievable (ALARA)”	2004 (Revision 1)
G-228	Developing and Using Action Levels	2001

SCA – CONVENTIONAL HEALTH AND SAFETY

Licence Condition 9.1: Conventional Health and Safety Program

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

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information including the proposed worker health and safety policies and procedures. As a federal regulated site, CFM is also subject to the requirements of Part II of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

CSA Z94.4, *Selection, use, and care of respirators*, sets out requirements for the selection, use, and care of respirators and for the administration of an effective respiratory protection program in the workplace

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
CSA Z94.4	Selection, Use and Care of Respirators	2018

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
CFM-SH	Safety and Health Program	PN

Employment and Social Development Canada is mandated with overseeing and enforcing compliance with the [Canada Labour Code](#), and its underlying regulations. CNSC staff monitor licensee compliance with its conventional health and safety program, and will take regulatory actions for any potential unsafe work practice situations.

Guidance

Guidance Documents

Document Number	Document Title	Version
REGDOC-2.8.1	Conventional Health and Safety	2019

SCA – ENVIRONMENTAL PROTECTION

Licence Condition 10.1, 10.2, 10.3 and 10.4: Environmental Protection Program, Nuclear Substance Release Limits, Hazardous Substances and Action Level Exceedance

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

10.2 The licensee shall control, monitor and record releases of nuclear substances to the environment from the facility such that the releases do not exceed the release limits specified in Appendix A.

10.3 The licensee shall control and monitor and record the releases of hazardous substances.

10.4 The licensee shall notify the Commission within 24 hours of becoming aware that an action level has been reached (or exceeded) and shall file a written report within 45 working days of becoming aware of the matter.

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain the proposed environmental protection policies, procedures, effluent and environmental monitoring programs. The GNSCR require that every licensee take all reasonable precautions to protect the environment and the health and safety of persons and to maintain the security of nuclear facilities and of nuclear substances. The [Radiation Protection Regulations](#) prescribe the radiation dose limits for the general public of 1 mSv per calendar year.

The release of hazardous substances is regulated by the CNSC as well as both the Ontario Ministry of the Environment, Conservation and Parks and Environment and Climate Change Canada through various acts and regulations.

CSA N288.1, Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities, provides guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities.

CSA N288.4, *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*, provides requirements for the design and implementation of an environmental monitoring program at nuclear facilities.

CSA N288.5, *Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills*, provides requirements for the design and implementation of an effluent monitoring program at nuclear facilities.

CSA N288.6, *Environmental risk assessments at Class I nuclear facilities and uranium mines and mills*, provides requirements for the performance and maintenance of an environmental risk assessment at nuclear facilities.

CSA N288.7, *Groundwater protection programs at Class I nuclear facilities and uranium mines and mills* provides requirements and guidance, which facilitate groundwater protection at nuclear facilities.

CSA N288.8, *Establishing and implementing action levels for releases to the environment from nuclear facilities*, provides requirements for establishing and implementing action levels at nuclear facilities.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC-2.9.1	Environmental Protection: Environmental Protection Policies, Programs and Procedures	2020
REGDOC-3.1.2	Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills	2018
CSA N288.1	Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities	2014 (R2019)
CSA N288.4	Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills	2010 (R2015)
CSA N288.5	Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills	2011 (R2016)
CSA N288.6	Environmental risk assessments at Class I nuclear facilities and uranium mines and mills	2012 (R2017)
CSA N288.7	Groundwater protection programs at Class I nuclear facilities and uranium mines and mills	2015
CSA N288.8	Establishing and implementing action levels for releases to the environment from nuclear facilities	2017

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
FSD-PGR-EMS-001	FSD Environmental Management System	PN
CFM-EP	Environmental Protection Program	PN
N/A	Environmental Risk Assessment for the Cameco Fuel Manufacturing Facility	PN
N/A	Derived Release Limits Report	PN
N/A	Review of Environmental Action Levels to Support the Environmental Protection Program	PN

The licensee shall review and revise the ERA in accordance with CSA N288.6. The results of such reviews shall be provided to CNSC staff.

The licensee's environmental protection program shall ensure the control, monitoring and recording of environmental emissions from the facility such that the releases to the environment do not exceed licence limits for environmental releases as defined below and in Appendix A of the licence.

Release Source	Parameter	Limit
Stack and building ventilation emissions	Uranium	14,000 g/year
Sanitary Sewer releases	Uranium	475,000 g/year

The licensee’s environmental protection program shall have action levels for environmental emissions. The environmental emissions action levels are:

Source	Parameter	Action Level	Averaging Period
Stack emissions for each process stack	Uranium	2 µg/m ³	Daily
Building Ventilation	Uranium - PP2	0.4 g/hr	Daily
	Uranium - All other process areas	1.0 g/hr	Daily
Liquid Effluent	Uranium	0.1 mg/L	Twice Weekly Composite
	pH	6.5 ≤ pH ≤ 9.0	Twice Weekly Composite
Fenceline Gamma: Locations #1 and #2	Gamma	0.2 µSv/hr	Quarterly Monitoring Period
Fenceline Gamma: Locations #3 to #12	Gamma	1.0 µSv/hr	Quarterly Monitoring Period

The licensee shall review and, if necessary, revise ALs specified above at least once every five years in order to validate their effectiveness. The results of such reviews shall be provided to CNSC staff.

Guidance

None provided.

SCA – EMERGENCY MANAGEMENT AND FIRE PROTECTION

Licence Condition 11.1: Emergency Preparedness Program

The licensee shall implement and maintain a program for emergency preparedness to address on-site and off-site events which can affect the facility.

Preamble

The [Class I Nuclear Facilities Regulations](#) require measures to prevent or mitigate the effects of accidental releases of nuclear substances and hazardous substances on the environment, the health and safety of persons and the maintenance of national security, including measures to assist, notify, report to off-site authorities including the testing of the implementation of these measures.

This LC requires the licensee to establish an emergency preparedness program to prepare for, to respond to, and to recover from the effects of accidental radiological/nuclear and/or hazardous substance release. As part of the emergency preparedness program, the licensee shall prepare an onsite emergency plan and establish the necessary organizational structure for clear allocation of responsibilities, authorities, and arrangements for coordinating onsite activities and cooperating with external response organizations throughout all phases of an emergency.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC-2.10.1	Nuclear Emergency Preparedness and Response	2016

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
MSP 30-02	Emergency Preparedness Plan and Response Procedure	PN

Guidance

None provided.

Licence Condition 11.2: Fire Protection Program

The licensee shall implement and maintain a program for fire protection for the facility.

Preamble

Licenses require a comprehensive fire protection program (the set of planned, coordinated, controlled and documented activities) to ensure 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

Document Number	Document Title	Version
NRCC 56192	National Fire Code of Canada	2015
NRCC 56190	National Building Code of Canada	2015
CSA N393	Fire Protection for Facilities that Process, Handle or Store Nuclear Substances	2013 (R2018)

Licensor Documents that Require Notification of Change

Document Number	Document Title	Notification
MSP 30-07	Fire Protection Program	PN
MSP 30-03	Fire Safety Plan	PN

Guidance

None provided.

SCA – WASTE MANAGEMENT

Licence Condition 12.1: Waste Management Program

The licensee shall implement and maintain a waste management program for the facility.

Preamble

The GNSCR require that a licence application contain information related to the in-plant management of radioactive waste or hazardous waste resulting from the licensed activities.

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain the proposed procedures for handling, storing, loading and transporting nuclear substances and hazardous substances.

CSA N292.0 *General principles for the management of radioactive waste and irradiated fuel* specifies common requirements for the management of radioactive waste and irradiated fuel from generation to storage or disposal.

CSA N292.3 *Management of low- and intermediate-level radioactive waste* provides requirements specific to the management of low- and intermediate-level radioactive waste in solid, liquid, or gaseous states.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
CSA N292.0	General Principles for the Management of Radioactive Waste and Irradiated Fuel	2014
CSA N292.3	Management of Low- and Intermediate-Level Radioactive Waste	2014

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
FSD-PGR-WM-001	Fuel Services Division Waste Management Program	PN
CFM-EP-02	CFM Waste Management Plan	PN

Guidance

Guidance Documents

Document Number	Document Title	Version
P-290	Managing Radioactive Waste	2004

Licence Condition 12.2: Preliminary Decommissioning Plan (PDP)

The licensee shall maintain a preliminary decommissioning plan (PDP) for decommissioning the facility. This PDP shall be reviewed every five years or when requested by the Commission, or a person authorized by the Commission.

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information including the proposed plan for the decommissioning of the nuclear facility or of the site. This LC requires that the licensee maintain a decommissioning strategy.

A decommissioning strategy 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 decommissioning strategy defines areas to be decommissioned and the general structure and sequence of the principle work packages. The decommissioning strategy forms the basis for establishing and maintaining a financial arrangement (financial guarantee) that will assure adequate funding of the decommissioning plan.

CSA N294 *Decommissioning of facilities containing nuclear substances* specifies requirements for the decommissioning of licensed facilities and other locations where nuclear substances are managed, possessed, or stored.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
CSA N294	Decommissioning of facilities containing nuclear substances	2019

The decommissioning plan for CFM is documented in the comprehensive PDP and the associated cost estimate. It is expected that the PDP will be revised as the conditions at the facility change. When the PDP is revised, the cost of decommissioning shall be reviewed. At a minimum, the PDP shall be reassessed every five years.

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
N/A	Preliminary Decommissioning Plan	PN

Guidance

Guidance Documents

Document Number	Document Title	Version
G-219	Decommissioning Planning for Licensed Activities	2000
G-206	Financial Guarantees for the Decommissioning of Licensed Activities	2000

SCA – SECURITY

Licence Condition 13.1: Security Program

The licensee shall implement and maintain a program for nuclear security at the facility.

Preamble

The GNSCR require that a licence application contain information including the proposed measures to control access to the site of the activity to be licensed and the nuclear substance, prescribed equipment or prescribed information.

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information including the proposed measures to prevent acts of sabotage or attempted sabotage at the nuclear facility, including measures to alert the licensee to such acts.

The [Nuclear Security Regulations](#) describe the application of Part 2 of these regulations which is relevant to this licensee.

Compliance Verification Criteria

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC-2.12.3	Security of Nuclear Substances: Sealed Sources	2020 v2.1

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
MSP 30-01	Security Plan	PN

Guidance

None provided.

SCA – SAFEGUARDS AND NON-PROLIFERATION

Licence Condition 14.1 and 14.2: Safeguards Program and Changes that Affect Implementation of Safeguards

14.1 The licensee shall implement and maintain a safeguards program and undertake all measures required to ensure safeguards implementation at the facility.

14.2 The licensee shall not make changes to operations, equipment or procedures that would affect the implementation of safeguards measures, except with the prior written approval of the Commission, or a person authorized by the Commission.

Preamble

The GNSCR require the licensee to take all necessary measures to facilitate Canada's compliance with any applicable safeguards agreement, and defines reporting requirements for safeguards events.

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information on the licensee's proposed measures to facilitate Canada's compliance with any applicable safeguards agreement.

This LC requires that the licensee implement and maintain a safeguards program. Safeguards is a system of inspection and other verification activities undertaken by the IAEA in order to evaluate a Member State's compliance with its obligations pursuant to its safeguards agreements with the IAEA.

Canada has entered into a Safeguards Agreement and an Additional Protocol (hereinafter referred to as "safeguards agreements") with the IAEA pursuant to its obligations under the [Treaty on the Non-Proliferation of Nuclear Weapons](#) (INFCIRC/140). The objective of the Canada-IAEA safeguards agreements is for the IAEA to provide assurance on an annual basis to Canada and to the international community that all declared nuclear materials are in peaceful, non-explosive uses and that there is no indication of undeclared nuclear materials or activities. This conclusion confirms that Canada is in compliance with its obligations under the following Canada-IAEA safeguards agreements:

- (i) *Agreement between the Government of Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*; and
- (ii) *Protocol Additional to the Agreement between Canada and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*.

These are reproduced in information circulars [INFCIRC/164](#) and [INFCIRC/164/Add.1](#).

In addition, the import and export of controlled nuclear substances, equipment and information identified in the [Nuclear Non-proliferation Import and Export Control Regulations](#) require separate authorization from the CNSC, consistent with subsection 3(2) of the GNSCR.

Compliance Verification Criteria

CFM shall request prior written approval of the Commission, or a person authorized by the Commission, for any changes to operation, equipment or procedures requested by the licensee that would affect the implementation of safeguards measures.

Delegation of authority by the Commission to give written permission applies to the following staff with respect to licence condition 14.2:

- Director, International Safeguards Division – All Safeguards matters,
- Director General, Directorate of Security and Safeguards, and
- Vice-President, Technical Support Branch

The Director of NPFDD shall be included in all correspondence related to licence condition 14.2.

Licensing Basis Publications

Document Number	Document Title	Version
REGDOC-2.13.1	Safeguards and Nuclear Material Accountancy	2018

Licensee Documents that Require Notification of Change

Document Number	Document Title	Notification
FSD-PGR-SG-01	FSD Safeguards Program	PN

Guidance

None provided.

SCA – PACKAGING AND TRANSPORT

Licence Condition 15.1: Packaging and Transport Program

The licensee shall implement and maintain a program for the facility for the receipt, packaging and transport of nuclear and hazardous substances.

Preamble

The [Class I Nuclear Facilities Regulations](#) require that a licence application contain information on the proposed procedures for handling, storing, loading and transporting nuclear substances.

The transport of nuclear substances or hazardous substances shall be done in accordance with the requirements of the [Packaging and Transport of Nuclear Substances Regulations, 2015](#), (PTNSR) and [Transportation of Dangerous Goods Regulations](#) (TDGR) set out by Transport Canada.

Compliance Verification Criteria

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
FSD-PGR-TRN-001	FSD Packaging and Transportation	PN

The licensee shall implement and maintain a packaging and transport program that will be in compliance with all the regulatory requirements set out in the PTNSR and in the TDGR.

Every person who transports or causes to be transported nuclear substances (included in Class 7 of the Schedule to the [Transportation of Dangerous Goods Act](#)) shall act in accordance with the requirements of the TDGR set out by Transport Canada.

The PTNSR provide specific requirements for the design of transport packages, the packaging, marking and labeling of packages and the handling and transport of nuclear substances.

Guidance

Guidance Documents

Document Number	Document Title	Version
REGDOC-2.14.1	Information Incorporated by Reference in Canada's Packaging and Transport of Nuclear Substances Regulations, 2015	2016

FACILITY SPECIFIC

This section contains the specific requirements for licence conditions that are not associated with the Safety and Control Areas.

Licence Condition 16.1: Financial Guarantee

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

Preamble

The GNSCR require that a licence application contain a description of any proposed financial guarantee relating to the activity to be licensed. The licensee is responsible for all costs of decommissioning at the facility. All such costs are included in the licensee’s decommissioning cost estimates and are covered by the licensee’s financial guarantee for decommissioning.

The licensee’s decommissioning cost estimate is provided in the facility’s preliminary decommissioning plan. The facility’s current financial guarantee is covered by a letter of credit for the full value of the estimated decommissioning cost.

Compliance Verification Criteria

Licence Documents that Require Notification of Change

Document Number	Document Title	Notification
N/A	Preliminary Decommissioning Plan	PN

Guidance

Guidance Documents

Document Number	Document Title	Version
G-206	Financial Guarantee for the Decommissioning of Licensed Activities	2000

Licence Condition 16.2: Nuclear Liability Insurance

The licensee shall maintain nuclear installation liability insurance.

Preamble

None provided.

Compliance Verification Criteria

CFM is required to maintain nuclear installation liability insurance and to ensure it remains valid and in effect for as long as the facility is designated as a nuclear installation.

Guidance

None provided.

APPENDIX A: DEFINITIONS AND ACRONYMS

A.1. Definitions

The following is a list of definitions of words or expressions used in the LCH that may need clarification; they are defined for the purpose of the LCH only. All other terms and expressions used in the LCH are consistent with the definitions provided in the NSCA, the regulations made pursuant to the NSCA, or in the CNSC regulatory document [REGDOC-3.6, *Glossary of CNSC Terminology*](#).

Accept/ed/able/ance – meets regulatory requirements, which mean it is in compliance with the documents referenced in the LCH.

Approval – Commission’s permission to proceed, for situations or changes where the licensee would be:

- not compliant with a regulatory requirements set out in applicable laws and regulations;
- not compliant with a licence condition; and
- not in the safe direction but the objective of the licensing basis is met.

Boundary Conditions – procedural, administrative rules and operating limits for ensuring safe operation of the facility based on safety analyses and any applicable regulatory requirements.

Compliance Verification Criteria – regulatory criteria used by CNSC staff to verify compliance with the licence conditions.

Design Basis – the entire range of conditions for which the nuclear facility is designed, in accordance with established design criteria, and for which damage to the fuel and/or the release of radioactive material is kept within authorized limits.

Guidance – guidance in the LCH is non-mandatory information, including direction, on how to comply with the licence condition.

Notification Document – a document which is submitted to the CNSC at the time of implementing the change.

Prior Notification Document – a document which is submitted to the CNSC prior to implementing the change.

Program(s) – a documented group of planned activities, procedures, processes, standards and instructions coordinated to meet a specific purpose.

Qualified Staff – trained licensee staff, deemed competent and qualified to carry out tasks associated with their respective positions.

Safe Direction – changes in facility safety levels that would not result in:

- (a) a reduction in safety margins;
- (b) a breakdown of barrier;
- (c) an increase (in certain parameters) above accepted limits;
- (d) an increase in risk;
- (e) impairment(s) of safety systems;
- (f) an increase in the risk of radioactive releases or spills of hazardous substances;
- (g) injuries to workers or members of the public;
- (h) introduction of a new hazard;
- (i) reduction of the defence-in-depth provisions;
- (j) causing hazards or risks different in nature or greater in probability or magnitude than those stated in the safety analysis of the nuclear facility.

Safety and Control Measures – measures or provisions which demonstrate that the applicant:

- (i) is qualified to carry on the licensed activities; and
- (ii) has made adequate provision for the protection of the environment, the health and safety of persons, the maintenance of national security and any measures required to implement international obligations to which Canada has agreed.

Written Notification – a physical or electronic communication between CNSC staff and a person authorized to act on behalf of the licensee.

A.2. Acronyms List

Acronym	Definition
AIA	Authorized Inspection Agency
ALARA	As Low As Reasonably Achievable
AL	Action Level
CFM	Cameco Fuel Manufacturing
CNSC	Canadian Nuclear Safety Commission
CSA	Canadian Standards Association
CVC	Compliance Verification Criteria
FFOL	Nuclear Fuel Facility Operating Licence
FSD	Fuel Services Division
GNSCR	<i>General Nuclear Safety and Control Regulations</i>
IAEA	International Atomic Energy Agency
LC	Licence Condition
LCH	Licence Conditions Handbook
mSv	Millisievert
N/A	Not Applicable
NEW	Nuclear Energy Worker
NPFD	Nuclear Processing Facilities Division
NSCA	<i>Nuclear Safety and Control Act</i>
NT	Notification
PDP	Preliminary Decommissioning Plan
PN	Prior Notification
PTNSR	<i>Packaging and Transport of Nuclear Substances Regulations</i>
SCA	Safety and Control Area
SSCs	Systems, Structures and Components
TDGR	<i>Transportation of Dangerous Goods Regulations</i>
µg	Microgram
µSv	Microsievert
U	Uranium
UO ₂	Uranium dioxide

APPENDIX B – LIST OF VERSION CONTROLLED DOCUMENTS

B.1 Codes, Standards and Regulatory Documents

Document	Document Title	Revision
CSA B51	Boiler and Pressure Vessel and Pressure Piping Code	2019
CSA N286	Management systems requirements for nuclear facilities	2012 (R2017)
CSA N286.0.1	Commentary on N286-12, Management systems requirements for nuclear facilities	2021
CSA N288.1	Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities	2014 (R2019)
CSA N288.4	Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills	2010 (R2015)
CSA N288.5	Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills	2011 (R2016)
CSA N288.6	Environmental risk assessments at Class I nuclear facilities and uranium mines and mills	2012 (R2017)
CSA N288.7	Groundwater protection programs at Class I nuclear facilities and uranium mines and mills	2015
CSA N288.8	Establishing and implementing action levels for releases to the environment from nuclear facilities	2017
CSA N292.0	General principles for the management of radioactive waste and irradiated fuel	2014
CSA N292.3	Management of low- and intermediate-level radioactive waste	2014
CSA N294	Decommissioning of facilities containing nuclear substances	2019
CSA N393	Fire protection for facilities that process, handle, or store nuclear substances	2013 (R2018)
CSA Z94.4	Selection, use and care of respirators	2018
G-129	Keeping Radiation Exposures and Doses “As Low as Reasonably Achievable (ALARA)”	2004 Revision 1
G-206	Financial Guarantee for the Decommissioning of Licensed Activities	2000
G-219	Decommissioning Planning for Licensed Activities	2000
G-228	Developing and Using Action Levels	2001
IAEA SSR-4	Safety of Nuclear Fuel Cycle Facilities	2017
NRCC 56190	National Building Code of Canada 2015	2015

Document	Document Title	Revision
NRCC 56192	National Fire Code of Canada 2015	2015
P-290	Managing Radioactive Waste	2004
REGDOC-2.1.1	Management System	2019
REGDOC-2.1.2	Safety Culture	2018
REGDOC-2.2.2	Personnel Training, Version 2	2016
REGDOC-2.2.5	Minimum Staff Complement	2019
REGDOC-2.4.3	Nuclear Criticality Safety	2019
REGDOC-2.5.1	General Design Considerations: Human Factors	2019
REGDOC-2.8.1	Conventional Health and Safety	2019
REGDOC-2.9.1	Environmental Protection: Environmental Protection Policies, Programs and Procedures	2013
REGDOC-2.10.1	Nuclear Emergency Preparedness and Response	2016
REGDOC-2.12.3	Security of Nuclear Substances Sealed Sources	2020 v2.1
REGDOC-2.13.1	Safeguards and Nuclear Material Accountancy	2018
REGDOC-2.14.1	Information Incorporated by Reference in Canada's Packaging and Transport of Nuclear Substances Regulations, 2015	2016
REGDOC-3.1.2	Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills	2018
REGDOC-3.2.1	Public Information and Disclosure	2018
REGDOC-3.5.3	Regulatory Fundamentals	2018
REGDOC-3.6	Glossary of CNSC Terminology	2016

B.2 Licensee Documents

Document #	Document Title	Notification
AP 018	Preventative Maintenance Execution Management	NT
CFM-EP	Environmental Protection Program	PN
CFM-EP-02	CFM Waste Management Plan	PN
CFM-HR-01	Systematic Approach to Training Program	PN
CFM-MS	Management System Program Manual	PN
CFM-RP	Radiation Protection Program Manual	PN
CFM-SH	Safety and Health Program	PN

Appendix B – List of Version Controlled Documents

Document #	Document Title	Notification
FLM	Facility Licensing Manual	PN
FSD-EMS-001	FSD Environmental Management System	PN
FSD-PGR-SG-01	FSD Safeguards Program	PN
FSD-PGR-TRN-001	FSD Packaging and Transportation	PN
FSD-PGR-WM-001	Fuel Services Division Waste Management Program	PN
HSI-048	Sealed Source	PN
MSP 13-02	Change Control	NT
MSP 27-16	Pressure Retaining Components	NT
MSP 30-01	Security Plan	PN
MSP 30-02	Emergency Preparedness Plan and Response Procedure	PN
MSP 30-03	Fire Safety Plan	PN
MSP 30-07	Fire Protection Program	PN
NCSPM	Nuclear Criticality Safety Program Manual	PN
PIP	Public Information Program	NT
05C144	Facility Licenced Area	PN
00A084	Site Map Property Layout	PN
N/A	Authorized Inspection Agency Services Agreement	NT
N/A	Safety Analysis Report for Cameco Fuel Manufacturing Inc. (Port Hope Facility)	PN
N/A	Environmental Risk Assessment for the Cameco Fuel Manufacturing Facility	PN
N/A	Derived Release Limits Report	PN
N/A	Review of Environmental Action Levels to Support the Environmental Protection Program	PN
N/A	Preliminary Decommissioning Plan	PN

Appendix B – List of Version Controlled Documents

CURRENT LICENCE

e-Doc 3732814 (WORD)

e-Doc 3767762 (PDF)



NUCLEAR FUEL FACILITY OPERATING LICENCE

CAMECO CORPORATION FUEL MANUFACTURING FACILITY

- I) LICENCE NUMBER:** FFOL-3641.00/2022
- II) LICENSEE:** Pursuant to section 24 of the *Nuclear Safety and Control Act* this licence is issued to:
- Cameco Fuel Manufacturing Inc.**
200 Dorset Street East
Port Hope, Ontario
L1A 3V4
- III) LICENCE PERIOD:** This licence is valid from **01 March 2012** to **28 February 2022**, unless suspended, amended, revoked or replaced.

IV) LICENSED ACTIVITIES:

This licence authorizes the licensee to:

- (i) operate its nuclear fuel facility for the production of nuclear fuel bundles from depleted, natural, and enriched uranium compounds, (hereinafter “the facility”) at 200 Dorset Street East, Port Hope, in the province of Ontario, as more particularly described in the Cameco Fuel Manufacturing Facility Licensed Area drawing 05C144 Rev 4 dated April 16, 2009.
- (ii) possess, transfer, use, process, import, package, transport, manage store and dispose of the nuclear substances that are required for, associated with, or arise from the activities described in (i);
- (iii) possess and use prescribed equipment and prescribed information that are required for, associated with, or arise from the activities described in (i).

V) EXPLANATORY NOTES:

- (i) 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 associated Regulations.
- (ii) The content of any appendix attached to this licence forms part of the licence.

- (iii) The Licence Condition Handbook (LCH) for CAMECO FUEL MANUFACTURING INC. provides compliance verification criteria in order to meet the conditions listed in the 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 licensing basis described in the LCH, unless otherwise permitted in this licence.
- 1.2 Changes to the 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.
- 1.3 Changes that are outside of the licence conditions are not permitted without the prior written approval of the Canadian Nuclear Safety Commission (hereinafter “the Commission”).
- 1.4 The licensee shall, in the event of any conflict or inconsistency between licence conditions, codes or standards or regulatory documents referenced in this licence, direct the conflict or inconsistency to the Commission, or a person authorized by the Commission.

2. Management System

- 2.1 The licensee shall implement and maintain a management system for the facility.
- 2.2 The licensee shall prepare an annual compliance and performance report.
- 2.3 The licensee shall prepare a quarterly compliance report for each calendar quarter.
- 2.4 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, and routine reports on the results of monitoring programs. The process shall define the frequency of the routine reports.
- 2.5 Where any release limit stipulated in Appendix A to this licence is exceeded, the licensee shall:
- (a) notify the Commission, Environment Canada, the Ontario Ministry of the Environment and the Municipality of Port Hope within 24 hours of detecting the event;
 - (b) investigate the cause and the circumstances; and
 - (c) within a time approved by the Commission take corrective action to comply with the release limit stipulated in Appendix A to this licence.
- 2.6 The licensee shall implement and maintain a public information program for the facility, including a public disclosure protocol.
- 2.7 The licensee shall give written notification of any changes to the management system program document prepared to meet condition 2.1.

3. Human Performance Management

3.1 The licensee shall implement and maintain a program for training staff for the facility.

4. Operating Performance

4.1 The licensee shall implement and maintain a program for the safe operation of the facility.

4.2 The operating program shall provide direction for safely operating the facilities and shall reflect the safety analysis referred to in condition 5.1.

4.3 The licensee shall establish and maintain, in addition to any record required to be maintained pursuant to the *Nuclear Safety and Control Act* and its Regulations, full and accurate records to show:

- a) the acquisition of nuclear substances including the quantity received, the form of the substance, and the name of the vendor;
- b) the inventory of all nuclear substances at the facility; and
- c) the disposition of all nuclear substances 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 nuclear substance, and the date of shipment.

4.4 The licensee shall implement and maintain a pressure boundary program for the facility.

4.5 The licensee shall have a formal agreement with an Authorized Inspection Agency, designated by the Commission as authorized to register, pressure boundary designs and procedures, perform inspections, and perform other applicable functions at the licensed facility.

5. Safety Analysis

5.1 The licensee shall implement and maintain a safety analysis for the facility.

5.2 The licensee shall ensure that all operations with fissionable materials will be carried out in accordance with the requirements set out in the CNSC document RD 327 Nuclear Criticality Safety.

6. Physical Design

6.1 The licensee shall implement and maintain a program for physical design for the facility.

6.2 The licensee shall not make any change to the design of, or equipment at the facility, that would introduce hazards different in nature or greater in probability than those considered by the safety analysis, without the prior written approval of the Commission or a person authorized by the Commission.

7. Fitness for Service

7.1 The licensee shall implement and maintain a program for maintenance for the facility.

7.2 The licensee shall implement and maintain a program for periodic inspection and testing for the facility.

8. Radiation Protection

- 8.1 The licensee shall implement and maintain a radiation protection program.
- 8.2 The licensee shall notify the Commission or a person authorized by the Commission within 24 hours of becoming aware that an action level has been exceeded and shall file a written report within 45 working days of becoming aware of the matter.
- 9. Conventional Health and Safety**
- 9.1 The licensee shall implement and maintain an occupational health and safety program for the facility.
- 10. Environmental Protection**
- 10.1 The licensee shall implement and maintain an environmental protection program for the facility.
- 10.2 The licensee shall control, monitor and record releases of nuclear substances to the environment from the facility such that the releases do not exceed the release limits specified in Appendix A.
- 10.3 The licensee shall control and monitor and record the releases of hazardous substances.
- 10.4 The licensee shall notify the Commission within 24 hours of becoming aware that an action level has been reached (or exceeded) and shall file a written report within 45 working days of becoming aware of the matter.
- 11. Emergency Management and Fire Protection**
- 11.1 The licensee shall implement and maintain a program for emergency preparedness to address on-site and off-site events which can affect the facility.
- 11.2 The licensee shall implement and maintain a program for fire protection for the facility.
- 12. Waste Management**
- 12.1 The licensee shall implement and maintain a program for waste management for the facility.
- 12.2 The licensee shall maintain a preliminary decommissioning plan (PDP) for decommissioning the facility. This PDP shall be reviewed every five years or when requested by the Commission, or a person authorized by the Commission.
- 13. Security**
- 13.1 The licensee shall implement and maintain a program for nuclear security at the facility.
- 14. Safeguards**
- 14.1 The licensee shall implement and maintain a safeguards program and undertake all measures required to ensure safeguards implementation at the facility.
- 14.2 The licensee shall not make changes to operations, equipment or procedures that would affect the implementation of safeguards measures, except with the prior written approval of the Commission, or a person authorized by the Commission.

15. Packaging and Transport

15.1 The licensee shall implement and maintain a program for the facility for the receipt, packaging and transport of nuclear and hazardous substances.

16. Facility-Specific

16.1 Financial Guarantee

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

16.2 Nuclear Liability Insurance

The licensee shall maintain nuclear installation liability insurance.

SIGNED at OTTAWA, this 28 day of February, 2012.



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

APPENDIX A
RELEASE LIMITS**Liquid Releases to Sewer**

Substance	Units	Limit
Uranium	g/year	475,000

Aerial Releases

Release Source	Substance	Units	Limit
Process stacks and building ventilation emissions	Uranium	g/year	14,000