



UNCLASSIFIED/NON CLASSIFIÉ

**SUPPLEMENTAL/COMPLÉMENTAIRE**

**CMD: 23-H3.A**

**Date signed/Signé le : February 24, 2023**

**Reference CMD(s)/CMD(s) de référence : 23-H3**

A Licence Renewal Amendment

Un changement au renouvellement de  
permis

***Royal Military College of  
Canada***

***Collège militaire royal du  
Canada***

***SLOWPOKE-2 Reactor***

***Réacteur SLOWPOKE-2***

Commission Public Hearing

Audience publique de la Commission

Scheduled for:

19 April 2023

Prévue pour :

19 avril 2023

Submitted by:

CNSC Staff

Soumise par :

Le personnel de la CCSN

**Summary**

The purpose of this supplemental Commission Member Document (CMD) is to supplement the information presented in CMD 23-H3, including:

- Royal Military College of Canada (RMC)'s amended application for a licence renewal
- Canada Nuclear Safety Commission (CNSC) staff assessment of RMC's amended application
- CNSC staff recommendation to accept RMC's amended application for a licence period of 20 years

**Résumé**

L'objectif de ce CMD supplémentaire est d'apporter des informations supplémentaires à ce qui est présenté dans le CMD 23-H3, comprenant:

- La demande de renouvellement de permis modifiée du Collège militaire royal du Canada (CMR)
- L'évaluation par le personnel de la Commission canadienne de sûreté nucléaire (CCSN) de la demande modifiée du CMR
- Recommandation du personnel de la CCSN d'accepter la demande modifiée du CMR pour une période d'autorisation de 20 ans

**Signed/signé le**  
February 24, 2023

---

Kavita Murthy  
**Director General**  
Directorate of Nuclear Cycle and Facilities Regulation

**Directrice générale**  
Direction de la réglementation du cycle et des installations nucléaires

This page was intentionally left blank.



## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1. OVERVIEW .....</b>	<b>2</b>
<b>2. BACKGROUND .....</b>	<b>2</b>
<b>3. CNSC STAFF ASSESSMENT.....</b>	<b>2</b>
<b>3.1. GENERAL CONSIDERATIONS .....</b>	<b>2</b>
<b>3.2. INTERNATIONAL APPROACH TO RESEARCH REACTOR LICENSING .....</b>	<b>6</b>
<b>3.3. CNSC REGULATORY OVERSIGHT.....</b>	<b>6</b>
<b>3.4. ONGOING COMMUNICATION AND ENGAGEMENT.....</b>	<b>7</b>
<b>3.5. COMMISSION ENGAGEMENT OPPORTUNITIES .....</b>	<b>8</b>
<b>4. CONCLUSION .....</b>	<b>9</b>
<b>5. RECOMMENDATION.....</b>	<b>9</b>
<b>REFERENCES.....</b>	<b>10</b>
<b>GLOSSARY .....</b>	<b>11</b>

## EXECUTIVE SUMMARY

CMD 23-H3.A is provided to supplement [CMD-23-H3](#), *Licence Renewal: Royal Military College of Canada SLOWPOKE-2*. RMC made an [application](#) for a licence renewal, initially requesting a licence period of 10 years. RMC later requested a licence period of 20 years in an [amended application](#). There was no other change requested.

This supplemental CMD provides CNSC staff's assessment of the amended application and a recommendation to accept a licence period of 20 years. Should a 20-year licence term be granted, CNSC staff recommend that RMC provide a performance update to the Commission at the mid-point of the licence term.

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

## 1. Overview

The purpose of this supplemental CMD is to provide CNSC staff's assessment of RMC's amended request for a licence period of 20 years and make a recommendation to the Commission.

## 2. Background

On February 23, 2022, RMC submitted an [application](#) for the renewal of its Non-Power Reactor Licence NPROL-20.00/2023 for a period of 10 years. On January 10, 2023, RMC submitted [CMD 23-H3.1](#), which highlights and condenses the main themes of the original application and indicates that "*RMC would welcome the renewal of the license for a longer period, such as 20 years*". On January 25, 2023, RMC submitted an [amendment](#) to the original application, changing the original requested licence period from 10 years to 20 years.

RMC has provided justifications for the longer licence period, which include the facility's excellent safety and performance record, a mature management system and programs that have delivered satisfactory performance in all 14 safety and control areas (SCA), as well as the excellent condition of the infrastructure of the facility. RMC also indicates that "*a longer licence term will provide an increased level of regulatory certainty and allow RMC to plan on a longer term*".

RMC did not indicate any intention to change its mandate or the activities that it currently carries out. RMC will continue to fulfill its role and objectives which are focused on education and research, and will keep up with the evolving regulatory environment, including the implementation of regulatory documents and standards, over the next 20 years.

## 3. CNSC Staff Assessment

### 3.1. General considerations

In the early 2000's, the typical licence period for Class I facilities was 2 years. In 2002, following the coming into force of the [Nuclear Safety and Control Act \(NSCA\)](#) and the evolution of CNSC's licensing process and regulatory framework, CNSC staff assessed the feasibility of granting longer licence terms. As an outcome of this review, CNSC staff developed an approach to recommending appropriate licence periods, which was based on benchmarking with international practices. This approach is outlined in CMD 02-M12 [1] and was presented to the Commission in March 2002. CMD 02-M12 provides a risk-informed process that has been used by CNSC staff to support recommendations regarding licence periods to the Commission in the past. Since 2002, CNSC's regulatory framework has continued to evolve and the typical licence period for Class I facilities has gradually lengthened to a 10-year term, as is the case for the current RMC licence. Some recent examples for which longer licence terms were granted are shown in Table 1.



**Table 1: Recent licence terms requested and granted**

Licensee	Previous licence term	Period requested	Period granted	Reference
SRB Technologies	7 years	15 years	12 years	<a href="#">Record of Decision</a>
Point Lepreau Generating Station	5 years	25 years	10 years	<a href="#">Record of Decision</a>
Cameco Fuel Manufacturing	10 years	20 years	20 years	<a href="#">Record of Decision</a>

While some of the above licence terms are shorter than requested by the respective applications, they are longer than the original licences for all licensees, and all decisions include a midterm update.

CNSC staff reviewed RMC's licence term request against the criteria from CMD 02-M12 [1] and found that a 20-year licence period is reasonable. This review is summarized in Table 2 below. In addition to the criteria listed in Table 2, CNSC staff incorporated other considerations before making a recommendation on the proposed licence period. These include considerations on international practices, CNSC's current regulatory oversight framework, ongoing communication and engagement during the licence term, and Commission engagement opportunities. These considerations are discussed in the subsections below.

**Table 2: CNSC staff assessment of the proposed 20-year licence term against the criteria of CMD 02-M12**

CMD 02-M12 Licence Period Criteria	CNSC Staff Position for 20-year Licence
<i>The recommended duration of the licence should be commensurate with the licensed activity.</i>	<p>There are no changes to the activities requested in the licence application. RMC's operations have been stable and consistent since it began operating the facility. RMC refueled the reactor in 2021, which will allow it to operate for an estimated 35 years.</p> <p>There is no specific limitation on the licence term on the basis of the licensed activity or facility life stage.</p>
<i>A longer licence period can be recommended when the hazards associated with the licensed activity are well characterized and their impacts well predicted, and they are within the scope considered in the environmental safety case.</i>	<p>RMC has successfully characterized and mitigated hazards associated with facility operations through the implementation of controls that ensure the protection of the health and safety of persons and the environment.</p> <p>Key documents describing RMC's safety case include the Safety Analysis Report and the Environmental Risk Assessment (ERA). These documents are part of the licensing basis and RMC is required to maintain all</p>

CMD 02-M12 Licence Period Criteria	CNSC Staff Position for 20-year Licence
	<p>documentation valid and up-to-date, regardless of licence period. CNSC staff have reviewed RMC's ERA and concluded that the environment and the health and safety of persons continue to be protected.</p> <p>Regardless of licence term, CNSC staff will continue to verify and ensure that, through ongoing compliance activities and reviews, RMC provides adequate protection of the environment and the health and safety of persons.</p>
<p><i>A longer licence period can be recommended when licensees have in place a management system, such as a quality assurance program, to provide assurance that their safety-related activities are effective and maintained.</i></p>	<p>RMC has a management system that meets the requirements of CSA N286-12 [2]. The various requirements of N286-12, such as those in the areas of Self Assessments, Independent Assessments, Continual improvement, Problem Identification and Resolution, Design and Change Control, and Maintenance provide a framework to ensure that all work activities are effective and maintained.</p> <p>RMC's safety performance over the previous licence period provides further demonstration that effective programs are maintained to ensure safety while performing the licensed activities, regardless of licence period.</p>
<p><i>A longer licence period can be recommended when effective compliance programs are in place on the part of both the applicant/licensee and the CNSC.</i></p>	<p>RMC has established programs that provide controls to ensure that facility operations remain in compliance with its licensing basis. CNSC staff review these programs periodically to confirm regulatory expectations continue to be met as the regulations and standards evolve.</p> <p>During the previous licence period, CNSC staff updated compliance requirements through publication of new/revised regulatory documents and adoption of the new standards. In each case, RMC has reviewed and revised its programs where necessary to implement these requirements.</p> <p>The CNSC has a robust and effective compliance verification program to ensure there is adequate regulatory oversight over the licensed activities at RMC. CNSC staff verify compliance through desktop reviews of documentation and reports and through inspections. CNSC staff issue notices of non-compliance where required and verify that RMC implements appropriate corrective actions, where necessary, to prevent recurrence and ensure that adequate provisions ensuring protection of the health and safety of persons and the environment remain in place.</p>
<p><i>A longer licence period can be recommended when the licensee</i></p>	<p>During the previous licence period CNSC staff rated RMC's performance as satisfactory across all SCAs each year. These</p>

<b>CMD 02-M12 Licence Period Criteria</b>	<b>CNSC Staff Position for 20-year Licence</b>
<i>has shown a consistent and good history of operating experience and compliance in carrying out the licensed activity.</i>	<p>ratings and other compliance highlights have been published and reported to the Commission in public meetings, through the Regulatory Oversight Reports (RORs).</p> <p>Worker dose and dose to the public have been kept well below regulatory limits at all times. RMC has also demonstrated excellent performance in the conventional health and safety SCA, having never experienced any lost time injuries.</p>
<i>The licence period must be consistent with the requirements of the <a href="#">CNSC Cost Recovery Fees Regulations</a>.</i>	As an academic institution, RMC is not subject to the <a href="#">CNSC Cost Recovery Fees Regulations</a> .
<i>The licence period should take account of the planning cycle of the facility and the licensee's plans for any significant change in licensed activity.</i>	<p>In its application RMC has not identified any specific project, contract, or milestone which is currently planned or ongoing that should warrant a shorter licence term. RMC refueled the reactor in 2021. The new fuel should last for approximately 35 years.</p> <p>RMC has kept up with the evolving regulatory environment including implementation of regulatory documents and standards, and is expected to continue to do so moving forward.</p>

### 3.2. International Approach to Research Reactor Licensing

Internationally, research reactors are issued licences for periods ranging from a few years to the entire life cycle of the facility. Outside Canada, there is only one SLOWPOKE reactor, which is operated by the University of West Indies, in Jamaica. Relative to other research reactors, SLOWPOKEs are at the lowest end of the risk spectrum. The licensing regime of research reactors in other countries may be supported by periodic assessments of facility safety, which also depends on the complexity and risk of the facility.

The Canadian regulatory framework includes requirements for periodic review and update of essential licensee documentation as recommended in IAEA guidance. Additionally, CSA N286 [2], which is referenced in the RMC Licence Conditions Handbook (LCH), requires that the licensee periodically review and assess all program documentation. When these reviews and updates are carried out, the licensee must notify CNSC staff, who then assess the updated version to ensure continued compliance with the licensing basis. This provides assurance that the licensing basis remains valid and that programs in place are acceptable on a continual basis.

The CNSC is an active participant on the international scene, including with the International Atomic Energy Agency (IAEA), the Organization for Economic Co-operation and Development's Nuclear Energy Agency (NEA), the USNRC and others, which inform CNSC's regulatory framework and licensing recommendations. The CNSC also participates in IAEA's Integrated Regulatory Review Service (IRRS) missions, which help host States strengthen and enhance the effectiveness of their regulatory infrastructure for nuclear safety. The CNSC hosted an IRRS mission to Canada in 2019. The IAEA confirmed that the CNSC has a strong, effective regulatory framework and that the organization demonstrates leadership in multiple areas. The CNSC has the processes in place to achieve safety objectives on a continual basis, which align with international best practices.

CNSC staff conclude that a longer licence term such as 20 years for a research reactor with a low risk profile such as the RMC SLOWPOKE-2 reactor would remain aligned with international practices.

### 3.3. CNSC Regulatory Oversight

The CNSC regulatory compliance program is effective and independent of the licence period granted by the Commission. CNSC staff have established a 10-year baseline compliance plan for all nuclear fuel cycle facilities. This baseline compliance plan is carried out regardless of licence period and verifies the continued safety through planned inspections, assessments and document reviews. The plan establishes a minimum number of inspections to be carried out at a given facility based on the facility's risk profile and is augmented by the specific features of the facility itself, such as specific activities and performance. For example, CNSC staff performed a specific inspection for the RMC refueling of 2021, as this activity was outside the normal compliance schedule.

Each year CNSC staff review the compliance plan as well as the licensee's planned activities to determine if additional verification activities should be added or moved. This approach is flexible and agile to ensure that appropriate, risk-informed regulatory oversight is in place, regardless of the licence period.

Canadian research reactor licensees are required to establish maintenance programs for their facilities. These programs are in place to support the ongoing safety of operation by identifying maintenance needs, including monitoring, inspection, testing, assessment, calibration, service, overhaul, repairs and replacement of parts. The programs identify the maintenance activities that are needed and CNSC staff verify compliance with the maintenance programs during planned compliance activities. Systems important to safety for the research reactors are simple to maintain and this work is done during normal outages. With the maintenance programs and effective regulatory oversight, CNSC staff remain satisfied that the adequacy of structures, systems and components is appropriately controlled at RMC.

CNSC requirements are updated through changes in regulations made under the NSCA and updates to CNSC REGDOCs and CSA standards. CNSC has established a process, through the LCH, to ensure updated regulatory requirements can be implemented within the licence term. If the new requirements cannot be immediately implemented, licensees are required to produce implementation plans, supported by a gap analysis. Once the licensee responds to the request, the commitment to implement the new requirements is recorded and entered into the LCH at the next update. This ensures that modern codes, standards and practices are implemented continually, rather than using a periodic assessment.

The past decade has been a very active period for the development of regulatory documents and CSA standards. The RMC LCH was updated in 2019 and introduced 8 new regulatory documents and standards. This example demonstrates the flexibility of the current regulatory framework to continually evolve, update and modernize requirements within the licence term to ensure licensed activities continue to be carried out safely.

### **3.4. Ongoing Communication and Engagement**

To deliver on the CNSC mandate to disseminate objective scientific, technical and regulatory information to the public, CNSC remains committed to openness and transparency through effective communication and engagement. Licensing hearings currently represent an opportunity to engage with Indigenous Nations and communities as well as the public, although this type of engagement has limitations. Other opportunities for engagement have been implemented such as the RORs. The RORs have proven to be an effective means for Indigenous Nations and communities and the public to engage with CNSC's regulatory process. For research reactors, the RORs are published on a 3-year frequency.

CNSC staff have implemented a number of improvements in recent years to modernize the approach to engagement and ongoing communications, including:

- Updating nuclear facility web pages on the CNSC public website to provide useful, easily accessible, information for interested parties.
- Initiating a review of the RORs presented to the Commission and associated processes to ensure they provide useful information.
- Reviewing the use of Environmental Protection Review Reports to ensure that information on CNSC's environmental protection reviews is easily accessible.
- Adding requirements on Public Information and Disclosure Protocols to include more opportunities for feedback from the public.

In addition to these improvements, CNSC staff are planning reviews of REGDOC-3.2.2, Indigenous Engagement and REGDOC-3.2.1, Public Information and Disclosure, to ensure requirements related to engagement and communications are modernized and aligned with best practices.

These improvements and reviews demonstrate CNSC's commitment to the modernization of information sharing and engagement. As additional improvements are identified, CNSC staff will review them to determine practical steps that can be taken to adopt the improvements. CNSC staff will continue to monitor ongoing communication and engagement efforts, regardless of licence term, to ensure that the approach is modern, agile, and focused on the effectiveness of communication with interested parties.

To ensure that an opportunity for meaningful engagement remains available with a longer licence term such as 20 years, CNSC staff recommend that RMC provide a performance update to the Commission at the mid-term point of the licence period. The update should include an overview of performance across all 14 SCAs as well as other regulatory matters of interest and an outlook for the remainder of the licence period. The performance update would be made available to the public for review in advance of a Commission meeting, and it would provide an opportunity for the public and Indigenous Nations and communities to provide input before the Commission. This would enable Indigenous Nations and communities and the public to engage with the Commission at a frequency that aligns with the previous 10-year licence terms for the RMC facility. CNSC staff's recommendation on the mid-term update is in alignment with the recent decisions of the Commission where longer terms were granted.

CNSC staff and RMC informed the Indigenous Nations and communities of RMC's amendment. At the time of finalizing this CMD, no feedback had been received on the longer licence term request. The amended request was also posted on the CNSC website and social media and circulated to its subscription list.

### **3.5. Commission Engagement Opportunities**

CNSC's capability to deliver on its mandate is not impacted by a longer licence period. Irrespective of the period of a licence granted by the Commission, the powers of the Commission will not be impacted. The Commission has the authority to conduct proceedings on any matter within its jurisdiction or any matter relating to the purpose of the NSCA if doing so would be in the public interest. In addition,

the Commission may, at any time, amend, suspend, revoke or replace a licence under the conditions prescribed in the *General Nuclear Safety and Control Regulation* ([GNSCR](#)). As prescribed in paragraph 8(2) of the GNSCR, conditions under which the Commission may take such action include: if the licensee is not qualified to carry out the licensed activity; the licensee has failed to comply with the Act, the regulations made under the Act, or its licence; or the licensed activity poses an unreasonable risk to the environment, health and safety of any people or the maintenance of national security.

CNSC staff activities and licensee performance are reported to the Commission through the RORs, which are presented to the Commission during a meeting with licensee participation. CNSC staff also engage the Commission through Event Initial Reporting, which provides notification of significant events or issues, potentially requiring Commission decision.

Any concerns identified by CNSC staff can be raised to the Commission for consideration and any requested changes by RMC that are deemed to be outside the licensing basis are subject to additional Commission approvals, regardless of the licence period. Additionally, for issues raised by members of the public, CNSC has an established [external complaint process](#) in place to ensure the issues raised are reviewed and addressed as appropriate.

#### **4. Conclusion**

CNSC staff conclude that the regulatory approach in place is effective, fulfills the intent of international practices and is able to provide appropriate regulatory oversight for RMC for any licence period. The health and safety of the public and risk to the environment would not be impacted by a longer licence term. There would also not be any increased risk to national security. CNSC's regulatory approach can adapt to address any future changes in the regulatory landscape.

#### **5. Recommendation**

CNSC staff recommend the Commission issue the requested licence for a 20-year term. If a 20-year licence term is granted, CNSC staff recommend that RMC provide a performance update to the Commission at the mid-point of the licence term that would enable the public and Indigenous Nations and communities to provide input on the RMC facility directly to the Commission.

## REFERENCES

1. *A flexible, rational approach to making recommendations to the Commission and Designated Officers on licence periods*, CMD 02-M12, 1 March 2002, e-Doc 3007783.
2. CSA Group, CSA N286-12, *Management System Requirements for Nuclear Facilities*, June 2012.



## GLOSSARY

CCSN	Commission canadienne de sûreté nucléaire
CMD	Commission Members Document
CMR	Collège militaire royal du Canada
CNSC	Canadian Nuclear Safety Commission
ERA	Environmental Risk Assessment
GNSCR	General Nuclear Safety and Control Regulation
IAEA	International Atomic Energy Agency
IRRS	Integrated Regulatory Review Service
LCH	Licence Conditions Handbook
NEA	Nuclear Energy Agency
NSCA	<i>Nuclear Safety and Control Act</i>
RMC	Royal Military College of Canada
ROR	Regulatory Oversight Report
SCA	Safety and Control Area
USNRC	United States Nuclear Regulatory Commission

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.