



# Record of Decision

DEC 21-H104

In the Matter of

Applicant Saskatchewan Research Council

Subject Application for a licence to abandon  
Saskatchewan Research Council's  
SLOWPOKE-2 reactor facility

Date of  
Decision October 1, 2021

**RECORD OF DECISION – DEC 21-H104**

Applicant: Saskatchewan Research Council

Address/Location: 15 Innovation Boulevard, Saskatoon, Saskatchewan,  
S7X 0X1

Purpose: Application for a licence to abandon Saskatchewan  
Research Council's SLOWPOKE-2 reactor facility

Application received: October 27, 2020

Hearing: Public Hearing in Writing – Notice of Hearing in Writing  
published on April 8, 2021

Date of decision: October 1, 2021

Panel of Commission: Mr. R. Kahgee

**Licence to Abandon: Granted**  
**Licence to Operate: Revoked**

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## 1.0 INTRODUCTION

1. Saskatchewan Research Council (SRC) has applied to the [Canadian Nuclear Safety Commission](#)<sup>1</sup> for a licence to abandon its SLOWPOKE-2<sup>2</sup> reactor facility, under section 24 of the [Nuclear Safety and Control Act](#)<sup>3</sup> (NSCA). SRC's Non-Power Operating Reactor licence for its SLOWPOKE-2 reactor facility, NPROL-19.01/2023, expires on June 30, 2023. In addition to the request for a licence to abandon its SLOWPOKE-2 reactor facility, SRC is requesting the revocation of its Non-Power Reactor Operating Licence.
2. The SRC SLOWPOKE-2 reactor facility is located at the SRC Environmental Analytical Laboratories complex in Saskatoon, Saskatchewan. Prior to its decommissioning, the reactor was a 20 kW-thermal sealed-container-in-pool type research reactor. The SRC SLOWPOKE-2 reactor came online in 1981 and ceased operation in April 2019.
3. Following a public hearing held on September 26, 2019, the Commission [amended](#) SRC's licence, authorizing SRC to decommission its SLOWPOKE-2 reactor facility. CNSC staff conducted a compliance inspection of the SLOWPOKE-2 reactor facility in July 2020 and is of the view that the decommissioning has reached the end state objective of SRC's Detailed Decommissioning Plan (DDP).

### Panel

4. Pursuant to section 22 of the NSCA, the President established a Panel of the Commission, consisting of Mr. Randall Kahgee, to consider the application. A [notice of hearing in writing](#) was published on May 5, 2021. The Commission considered written submissions from SRC ([CMD 21-H104.1](#)) and CNSC staff ([CMD 21-H104](#) and [CMD 21-H104.A](#)).

## 2.0 DECISION

5. Based on its consideration of the matter, as described in more detail in the following sections of this Record of Decision, the Commission concludes that SRC has fully decommissioned its SLOWPOKE-2 reactor facility and has met CNSC regulatory requirements respecting to the decommissioning activities. Therefore,

pursuant to section 24 of the NSCA, the Commission issues Saskatchewan Research Council a licence to abandon a non-power SLOWPOKE-2 reactor facility, NPRAL-19.00/2021. The licence is valid from October 8, 2021 to October 9, 2021. The Commission concurrently revokes the current Saskatchewan Research Council licence, NPROL-19.01/2023.

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

<sup>2</sup> Safe LOW Power Kritical Experiment (SLOWPOKE)

<sup>3</sup> Statutes of Canada (S.C.) 1997, c. 9.

The Commission releases the financial guarantee held for decommissioning of Saskatchewan Research Council's SLOWPOKE-2 Reactor Facility.

### 3.0 ISSUES AND COMMISSION FINDINGS

6. In making its licensing decision, the Commission considered the assessment of the end-state decommissioning of SRC's SLOWPOKE-2 reactor facility and the adequacy of the measures implemented for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.
7. The Commission sent questions to CNSC staff, through [CMD 21-H104Q](#), seeking further information. The Commission is satisfied with the completeness of the responses provided by CNSC staff ([CMD 21-H104.A](#)) to the questions raised by the Commission.
8. The following issues are pertinent to this matter:
  - Applicability of the *Impact Assessment Act*
  - Waste management and decommissioning
  - Safeguards and Non-Proliferation
  - Indigenous consultation
  - Financial Guarantee
  - Applicability of the *Nuclear Liability and Compensation Act*

#### 3.1 Applicability of the *Impact Assessment Act*

9. In considering SRC's application for a licence to abandon its SLOWPOKE-2 reactor facility, the Commission reviewed whether and what requirements the [Impact Assessment Act](#) (IAA) imposes in relation to the activities sought to be authorized in this application. Satisfying any such requirements is generally a prerequisite to licensing.
10. CNSC staff determined that the abandonment of a decommissioned nuclear reactor facility does not trigger an impact assessment under the IAA: it is not a project on federal lands or outside of Canada, and is not a designated project under that Act.
11. The Commission notes that an Environmental Protection Review was previously [conducted by CNSC staff](#) and [approved by the Commission](#) on December 6, 2019, for the decommissioning of SRC SLOWPOKE-2 reactor facility.

12. The Commission agrees with the analysis by CNSC staff, and concludes that there is no requirement under the IAA for an impact assessment to be completed. The Commission is also satisfied that there are no other applicable requirements of the IAA to be addressed in this matter.<sup>4</sup>

### **3.2 Waste Management and Decommissioning**

13. The Commission reviewed the information provided regarding the waste management and decommissioning activities at SRC SLOWPOKE-2 reactor facility. The Commission also considered the end-state of the facility.

#### Waste Characterization

14. The Commission had [previously required](#) SRC to submit detailed waste characterization data and a confirmation of the accuracy of radionuclide estimates as part of its application for a licence to abandon its SLOWPOKE-2 reactor facility. CNSC staff confirmed that SRC submitted the required information, and that it met CNSC expectations.
15. SRC characterized the decommissioning wastes as they were packaged for transportation. The characterization included monitoring for fixed and removable contamination, and radiochemical analyses for major radionuclides. The measured radioactivity levels were well below SRC's estimates due to conservative impurity assumptions and decay time. CNSC staff noted that while SRC's estimates assumed a minimum decay time of 2 weeks, the actual removal of components was done months later.
16. The Commission is of the view that SRC has fulfilled its requirements regarding the detailed characterization of decommissioning waste. SRC adequately confirmed the accuracy of its radioactivity estimates.

#### Waste Management

17. CNSC staff confirmed that materials and wastes removed from SRC's SLOWPOKE-2 reactor facility were effectively segregated and disposed of in accordance with applicable regulations. CNSC staff reported that the equipment that did not meet unconditional release criteria – including reactor components, ion exchange resins and concrete from the reactor pool – were removed and transported to Chalk River Laboratories in Chalk River, Ontario for long-term storage as radioactive waste. CNSC staff added that the majority of the waste meeting unconditional release criteria was sent to local authorized recycling and waste disposal facilities.

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

18. Regarding the reactor water and pool water mixture, CNSC staff reported that the water was safely treated and discharged into the City of Saskatoon's sanitary sewer system. The evidence before the Commission is that releases to sanitary sewer were below the release limits set in Appendix R, *Regulatory Quantities for Typical Radionuclides*, of REGDOC-1.6.1, and the exposure-based release limit derived using the methodology in CSA N288.1-14, *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities*.<sup>5</sup>
19. With respect to radiation protection during decommissioning, CNSC staff confirmed that SRC monitored potential radioactive airborne contaminants throughout the decommissioning process. No detectable concentrations of airborne radioactivity above normal background were reported by the licensee as having been measured. In terms of radioactive doses received by workers, SRC reported that the total collective dose was 0.16 mSv for the whole body, with an average individual dose of 0.018 mSv, which was well below the action level set for the project of 1 mSv/person. No recordable dose to the extremities was received by any decommissioning workers.
20. CNSC staff indicated that no reportable events were reported by the licensee as a result of decommissioning work at the SLOWPOKE-2 reactor facility, and was of the view that SRC had applied lessons learned during the decommissioning of the SLOWPOKE-2 reactors at the University of Toronto, Dalhousie University and University of Alberta.
21. The Commission is satisfied with the reported information regarding the waste removal and segregation and considers that the waste removal activities are fully completed and were done in a safe manner.

#### Decommissioning

22. CNSC staff submitted information with respect to its regulatory oversight of SRC's decommissioning work. CNSC staff conducted a remote compliance inspection of SRC's SLOWPOKE-2 reactor facility from July 8 to 10, 2020, and verified that the decommissioning activities were conducted in compliance with the NSCA, its associated Regulations and SRC's detailed decommissioning plan. CNSC staff's inspection confirmed that the reactor pool had been completely drained and that the components of the reactor and auxiliary systems had been removed. CNSC staff confirmed that alpha, gamma and beta radiation readings in SRC SLOWPOKE-2 reactor facility were near background levels.
23. SRC submitted its End-State Decommissioning Report for CNSC review. CNSC staff indicated that its content reflects the recommendations of Regulatory Guide G-219, [\*Decommissioning Planning for Licensed Activities\*](#) and that the structure and content of SRC's End-State Decommissioning Report were consistent with CSA standard N294-19,

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<sup>5</sup> N288.1-14, *Guidelines for calculating derived release limits for radioactive material in airborne and liquid effluents for normal operation of nuclear facilities*, CSA Group, 2014

*Decommissioning of Facilities Containing Nuclear Substances.*<sup>6</sup> CNSC staff confirmed via inspection that decommissioning activities were completed in accordance with SRC's detailed decommissioning plan and that all equipment and material associated with the operation of the SLOWPOKE-2 reactor facility have been removed.

24. CNSC staff's assessment determined that the unconditional release and unrestricted use criteria of the facility have been met. SRC's analyses of the samples demonstrated that the remaining reactor pool floor and wall are below the Unconditional Clearance Level, as required by the [\*Nuclear Substances and Radiation Devices Regulations\*](#). In addition, the surface contamination at the decommissioned SLOWPOKE-2 reactor facility is below the criteria for unrestricted use, as given in REGDOC-1.6.1, [\*Licence Application Guide: Nuclear Substances and Radiation Devices\*](#).
25. Based on the evidence provided, the Commission is satisfied that the decommissioning activities have been completed in accordance with regulatory requirements, and that the unconditional release and unrestricted use criteria have been met.

### **3.3 Safeguards and Non-Proliferation**

26. Pursuant to its obligations under the [\*Treaty on the Non-Proliferation of Nuclear Weapons\*](#) and the Safeguards Agreement with the International Atomic Energy Agency (IAEA), Canada may be asked to provide the IAEA access to "any decommissioned facility". This access can contribute to demonstrating that there is no indication of undeclared nuclear materials or activities. CNSC staff noted that after a Class I nuclear facility is released from regulatory control, there remains statutory authority under which the CNSC could potentially provide the IAEA access to the decommissioned facility for a period of at least 10 years after expiry of a licence to abandon. This would be through use of the inspector power in section 30 of the NSCA, where inspection for compliance with record-keeping obligations could be considered reasonable.
27. Asked for additional information regarding the provision of IAEA access to the decommissioned SLOWPOKE-2 reactor facility, CNSC staff explained that CNSC inspectors have the authority to inspect locations under section 30 of the NSCA. CNSC staff added that section 33 of the NSCA states "*While exercising any authority under this Act, an inspector may be accompanied by any other person chosen by the inspector*", on this basis, a CNSC inspector could invite IAEA inspectors to accompany the inspector, and this could facilitate IAEA access to SRC's SLOWPOKE-2 reactor facility.
28. CNSC staff reported that SRC had submitted the required final design information questionnaire (DIQ) describing the facility on March 30, 2021 and that the IAEA will verify the decommissioned status of the facility during a design information verification in the near future.

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<sup>6</sup> N294-19, *Decommissioning of Facilities Containing Nuclear Substances*, CSA Group, 2019.

29. The SRC SLOWPOKE-2 reactor was cooled and moderated with light water and operated on 93% enriched uranium fuel, also known as high-enriched uranium (HEU). The reactor core contained slightly less than 1 kg HEU. CNSC staff indicated that the SLOWPOKE-2 reactor's HEU fuel was removed from the reactor pool in the presence of the IAEA, CNSC staff and United States Department of Energy (US DOE) representatives. The HEU fuel was sealed by the IAEA for safeguards purposes and safely transported to the United States in accordance with applicable transport and security requirements.
30. Based on the information provided, the Commission is satisfied that the provisions in the areas of safeguards and non-proliferation at SRC's facility that are necessary for maintaining national security, and the measures necessary for implementing international agreements to which Canada has agreed, have been met. As there are no longer any nuclear materials subject to safeguards on site, it is the view of the Commission that safeguards obligations have been fully met and that the issuance of a licence to abandon is reasonable.

### **3.4 Indigenous Consultation**

31. The common law duty to consult with Indigenous groups applies when the Crown contemplates actions that may adversely affect established or potential Indigenous and treaty rights. Based on the information provided, CNSC staff determined that the abandonment of the SRC SLOWPOKE-2 reactor facility will not cause an adverse impact on potential or established Indigenous or treaty rights, therefore, the duty to consult does not arise in relation to this project.
32. In response to the Commission inquiry about engagement activities carried out in relation to SRC's application, CNSC staff reported that SRC shared information about the project to the Metis Nation of Saskatchewan (MNS), Saskatoon Tribal Council, Muskeg Lake Cree Nation, and the Prince Albert Grand Council (PAGC), and invited them to attend a public meeting in [December 2018](#). However, no representatives of the Indigenous community attended the event or contacted SRC. CNSC staff added that it received no specific requests or expressions of interest from any Indigenous groups following the issuance of the [notice of hearing in writing on May 5 2021](#) nor for the hearing to authorize the decommissioning of SRC SLOWPOKE-2 reactor facility, which was held on [September 26, 2019](#).
33. The Commission is satisfied with CNSC staff's efforts to engage with Indigenous groups who may have interest in SRC's SLOWPOKE-2 reactor facility. The efforts made by CNSC staff in this regard are key to the important work of the Commission toward reconciliation and relationship-building with Canada's Indigenous peoples, and for the purposes of this licensing action have satisfied the Commission's responsibility in this regard.

### **3.5 Financial Guarantee**

34. SRC holds a financial guarantee for the decommissioning of the SLOWPOKE-2 reactor facility. The financial guarantee is in the amount of \$5.76 million, and in the form of Trust and Financial Security and Access Agreements. Having completed the major milestones in decommissioning, SRC has requested the release of financial guarantee funds.
35. CNSC staff confirmed that SRC no longer requires a financial guarantee for its SLOWPOKE-2 reactor facility as no decommissioning activities remain. CNSC staff recommended that the Commission release SRC's financial guarantee funds.
36. The Commission is satisfied that SRC no longer requires a financial guarantee for its SLOWPOKE-2 reactor facility as no decommissioning activities remain. With this decision, it instructs CNSC officials to take the steps to release the funds back to the licensee.

### **3.6 Nuclear Liability and Compensation Act**

37. SRC's SLOWPOKE-2 reactor facility is subject to the [Nuclear Liability and Compensation Act](#) because it is designated as a nuclear installation under the [Nuclear Liability and Compensation Regulations](#) and therefore requires nuclear liability insurance during its operation. SRC intends to submit a request to the Minister of Natural Resources for the removal of its facility as a designated nuclear installation under the regulations, to be effective on the date of issuance of a licence to abandon.
38. As the CNSC is consulted on such matters, the Commission notes that with the successful completion of the decommissioning of the facility, there should be no reason for the facility to remain a designated nuclear installation.

### **4.0 CONCLUSION**

39. The Commission concludes that the proposed licence to abandon SRC's SLOWPOKE-2 reactor facility satisfies the conditions under section 24 of the NSCA. The Commission is satisfied that SRC may be authorized to abandon its SLOWPOKE-2 reactor facility. With the completion of decommissioning activities, the Commission is of the view that there will be adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

40. The Commission is satisfied that the decommissioning activities have been completed, and that the unconditional release and unrestricted use criteria have been met. The Commission is satisfied with the reported information regarding waste removal and segregation. SRC has fulfilled its requirements regarding the detailed characterization of decommissioning waste, including confirming the accuracy of its radioactivity estimates. The Commission is further satisfied that the waste removal activities were completed in a safe manner.
41. Therefore, pursuant to section 24 of the NSCA, the Commission issues Saskatchewan Research Council a licence to abandon the non-power SLOWPOKE-2 reactor facility, NPRAL-19.00/2021. The licence is valid from October 8, 2021 to October 9, 2021. The Commission concurrently revokes the current Saskatchewan Research Council licence, NPROL-19.01/2023.
42. The Commission is satisfied with CNSC staff's efforts to engage with Indigenous groups near SRC's SLOWPOKE-2 reactor facility, and notes that Indigenous groups did not participate or intervene in this hearing process. The Commission is satisfied that this licence to abandon would not cause adverse impacts to any potential or established Indigenous and/or treaty rights and that the duty to consult does not arise in relation to this project.
43. The Commission releases the financial guarantee held for decommissioning of Saskatchewan Research Council's SLOWPOKE-2 Reactor Facility.

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Randall Kahgee  
Member,  
Canadian Nuclear Safety Commission

October 5, 2021

Date