



Canadian Nuclear  
Safety Commission

Commission canadienne  
de sûreté nucléaire

# Record of Proceedings, Including Reasons for Decision

In the Matter of

**Applicant** Royal Military College of Canada

**Subject** Application to Renew the Non-Power Reactor  
Operating Licence for the SLOWPOKE-2 reactor  
at the Royal Military College of Canada

**Public Hearing** May 15, 2013  
**Date**

**RECORD OF PROCEEDINGS**

Applicant: Royal Military College of Canada

Address/Location: P.O. Box 17000, Station Forces, Kingston, Ontario K7K 7B4

Purpose: Application to Renew the Non-Power Reactor Operating Licence for the SLOWPOKE-2 reactor at the Royal Military College of Canada

Application received: August 21, 2012 and November 7, 2012

Date of public hearing: May 15, 2013

Location: Canadian Nuclear Safety Commission (CNSC) Public Hearing Room, 280 Slater St., 14th. Floor, Ottawa, Ontario

Members present: M. Binder, Chair      R. Velshi  
R. J. Barriault      D.D. Tolgyesi  
A. Harvey      A. McEwan  
M. J. McDill

Secretary: M.A. Leblanc  
Recording Secretary: T. Johnston  
Senior General Counsel: J. Lavoie

<b>Applicant Represented By</b>			<b>Document Number</b>
<ul style="list-style-type: none"><li>• K. Nielson, Director of the SLOWPOKE-2 facility</li><li>• D. Ferguson, Radiation Safety Officer</li><li>• R. Weir, Professor Emeritus at RMCC</li><li>• P. Chan, Professor in Nuclear Engineering</li></ul>			CMD 13-H9.1 CMD 13-H9.1A
<b>CNSC staff</b>			<b>Document Number</b>
<ul style="list-style-type: none"><li>• R. Jammal</li><li>• P. Elder</li></ul>	<ul style="list-style-type: none"><li>• C. Carrier</li><li>• I. Erdebil</li></ul>	<ul style="list-style-type: none"><li>• W. Islam</li></ul>	CMD 13-H9

**Licence: Renewed**

## Table of Contents

<b>1.0 INTRODUCTION</b> .....	- 1 -
<b>2.0 DECISION</b> .....	- 1 -
<b>3.0 ISSUES AND COMMISSION FINDINGS</b> .....	- 2 -
<b>3.1 Management System</b> .....	- 2 -
<b>3.2 Human Performance Management</b> .....	- 3 -
3.2.1 Training.....	- 3 -
3.2.2 Examination and Certification .....	- 4 -
3.2.3 Conclusion on Human Performance Management .....	- 5 -
<b>3.3 Operating Performance</b> .....	- 5 -
3.3.1 Conduct of Operations .....	- 5 -
3.3.2 Event Reporting .....	- 6 -
3.3.3 Conclusion on Operating Performance .....	- 6 -
<b>3.4 Safety Analysis</b> .....	- 6 -
3.4.1 Fukushima Follow-up Actions.....	- 7 -
3.4.2 Conclusion on Safety Analysis .....	- 7 -
<b>3.5 Physical Design</b> .....	- 8 -
<b>3.6 Fitness for Service</b> .....	- 9 -
3.6.1 Maintenance.....	- 9 -
3.6.2 Equipment Fitness for Service .....	- 10 -
3.6.3 Aging Management.....	- 11 -
3.6.4 Conclusion on Fitness for Service .....	- 12 -
<b>3.7 Radiation Protection</b> .....	- 12 -
<b>3.8 Conventional Health and Safety</b> .....	- 14 -
<b>3.9 Environmental Protection</b> .....	- 15 -
3.9.1 Environmental Management System .....	- 15 -
3.9.2 Effluent and Emissions Control .....	- 16 -
3.9.3 Conclusion on Environmental Protection .....	- 16 -
<b>3.10 Emergency Management and Fire Protection</b> .....	- 16 -
3.10.1 Emergency Management .....	- 16 -
3.10.2 Fire Protection.....	- 17 -
3.10.3 Conclusion on Emergency Management and Fire Protection.....	- 17 -
<b>3.11 Waste Management</b> .....	- 18 -
<b>3.12 Security</b> .....	- 19 -
<b>3.13 Safeguards</b> .....	- 20 -
<b>3.14 Packaging and Transport</b> .....	- 20 -
<b>3.15 Application of the <i>Canadian Environmental Assessment Act</i></b> .....	- 21 -
<b>3.16 Aboriginal Engagement</b> .....	- 22 -
<b>3.17 Public Information Program</b> .....	- 22 -
<b>3.18 Decommissioning Plans and Financial Guarantee</b> .....	- 24 -
<b>3.19 Nuclear Liability Insurance and Cost Recovery</b> .....	- 24 -
<b>3.20 Licence Length and Conditions</b> .....	- 25 -
<b>4.0 CONCLUSION</b> .....	- 26 -

## 1.0 INTRODUCTION

1. The Royal Military College of Canada (RMCC) has applied to the Canadian Nuclear Safety Commission<sup>1</sup> for the renewal of the Non-Power Reactor Operating Licence for a period of 10 years for its SLOWPOKE-2 reactor located in Kingston, Ontario. The current operating licence NPROL-20.00/2013 expires on June 30, 2013.
2. The RMCC Safe Low-Power Kritical Experiment (SLOWPOKE-2) reactor is a small research reactor located at the Sawyer Science and Engineering Buildings of the RMCC in Kingston, Ontario. RMCC's SLOWPOKE-2 reactor has been in operation since 1985 and is used for nuclear and radiation protection education and training at RMCC as well as neutron activation analysis, neutron radiography and neutron tomography.

### Issue

3. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*<sup>2</sup> (NSCA):
  - a) if RMCC is qualified to carry on the activity that the licence would authorize; and
  - b) if, in carrying on that activity, RMCC would make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.

### Public Hearing

4. The Commission, in making its decision, considered information presented for a public hearing held on May 15, 2013 in Ottawa, Ontario. The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*<sup>3</sup>. During the public hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 13-H9) and RMCC (CMD 13-H9.1 and CMD 13-H9.1A). Oral and written interventions were allowed, but none were received.

## 2.0 DECISION

5. Based on its consideration of the matter, as described in more detail in the following

---

<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> Statutes of Canada (S.C.) 1997, chapter (c.) 9.

<sup>3</sup> Statutory Orders and Regulations (SOR)/2000-211.

sections of this *Record of Proceedings*, the Commission concludes that RMCC is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that RMCC, in carrying on that activity, will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. Therefore,

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the Royal Military College of Canada's Non-power Reactor Operating Licence for its SLOWPOKE-2 reactor located in Kingston, Ontario. The renewed licence, NPROL-20.00/2023, is valid from July 1, 2013 to June 30, 2023.

6. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 13-H9.
7. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority in the Licence Conditions Handbook (LCH). The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.
8. With this decision, the Commission directs CNSC staff to provide annual reports on the performance of RMCC. CNSC staff shall present these reports at public proceedings of the Commission.

### **3.0 ISSUES AND COMMISSION FINDINGS**

9. In making its licensing decision, the Commission considered a number of issues relating to RMCC's qualification to carry out the proposed activities and the adequacy of the proposed measures for protecting the environment, the health and safety of persons, national security and international obligations to which Canada has agreed.

#### **3.1 Management System**

10. The Commission examined RMCC's Management System which covers the framework that establishes the processes and programs required to ensure the organization achieves its safety objectives, continuously monitors its performance against these objectives, and fosters a healthy safety culture.
11. RMCC reported that their management system strives to ensure that appropriate resources are allocated to protect the health and safety of workers, the public, the facility and the environment.

12. CNSC staff stated that RMCC's quality assurance program, submitted in 2008, complies with CNSC regulatory requirements. CNSC staff added that RMCC's performance in the Management System Safety and Control Area (SCA) was rated as satisfactory.
13. CNSC staff confirmed that RMCC's performance related to personnel capability, use of approved processes, calibration of instruments, document control and records was satisfactory during the review period.
14. The Commission enquired about the impact that the recent government cut-backs, specifically within DND, may have had on RMCC. A representative from RMCC responded that there have been changes in terms of position adjustments under the Workforce Adjustment Program and analytical work has been contracted. The RMCC representative confirmed that there are no safety concerns with regards to the staffing changes and that the Commandant of DND and the Principal of RMCC fully support the SLOWPOKE-2 reactor facility.
15. Based on its consideration of the presented information, the Commission concludes that RMCC has appropriate organization and management structures in place and that the operating performance at the SLOWPOKE-2 facility provides a positive indication of RMCC's ability to adequately carry out the activities under the proposed licence.

### **3.2 Human Performance Management**

16. Human performance management encompasses activities that enable effective human performance through the development and implementation of processes that ensure the licensee's staff has the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.
17. CNSC staff is of the opinion that RMCC's training program implementation and personnel certification performance is satisfactory with respect to this SCA. CNSC staff will continue to monitor implementation and maintenance of the training programs through its regulatory compliance activities.

#### **3.2.1 Training**

18. CNSC staff stated that a Systematic Approach to Training (SAT) is the framework endorsed by the CNSC for establishing and maintaining training for SLOWPOKE-2 reactor operators, reactor engineers and reactor technicians.
19. CNSC staff reported that RMCC was required to update its training program to be consistent with a SAT approach. CNSC staff determined in 2009 that RMCC's revised training program for SLOWPOKE-2 reactor operators was developed satisfactorily in

accordance with the SAT.

20. RMCC reported that new technicians are trained by experienced technicians to perform specific procedures using RMCC's training record for the teaching, learning and targets of accomplishment.
21. RMCC stated that each individual who may work in the physical boundaries of the SLOWPOKE-2 reactor is required to complete a Radiation Safety Training session conducted by the RMCC Radiation Safety Officer.
22. RMCC reported that continued training is mandatory for reactor operators, and personnel who work in the SLOWPOKE-2 facility are administered proficiency tests several times annually.
23. CNSC staff noted that an inspection was conducted in February 2011 at the SLOWPOKE-2 facility to assess training processes. Action notices relating to this inspection were issued pertaining to scheduling initial training, training change management and evaluation of training programs. CNSC staff stated that these deficiencies were minor and did not affect the safe operation of the facility. CNSC staff added that RMCC's corrective action plans were reviewed and accepted by CNSC staff.

### 3.2.2 Examination and Certification

24. RMCC reported that all of its operators for the SLOWPOKE-2 reactor facility are certified by the CNSC. Additionally, RMCC noted that CNSC reactor operator, reactor engineer and reactor technician certifications are currently valid for 5 years. CNSC staff concurred with RMCC. CNSC staff noted that there are currently six certified SLOWPOKE-2 operators at RMCC.
25. The Commission enquired if there is a minimum complement of operators for SLOWPOKE reactors and sought information on the requirements to maintain qualification as an operator. CNSC staff responded that the minimum staffing requirement at a SLOWPOKE facility is one person. CNSC staff noted that the licence conditions allow the reactor to be operated remotely for up to 24 hours. CNSC staff further responded that operators can maintain certification by continuing their training program which involves carrying out weekly maintenance checks, as well as restarting and shutting down the SLOWPOKE reactor periodically.
26. The Commission enquired if CNSC certification is a prerequisite to be appointed as a reactor engineer or technician at a SLOWPOKE reactor facility. CNSC staff responded that certification is a prerequisite and that individuals must be certified before they are appointed.

### 3.2.3 Conclusion on Human Performance Management

27. Based on its consideration of the presented information, the Commission concludes that RMCC has appropriate programs in place and that current efforts related to human performance management provide a positive indication of RMCC's ability to adequately carry out the activities under the proposed licence.

### 3.3 Operating Performance

28. Operating performance includes operating policies, reporting and trending, and application of operating experience that enable the licensee's effective performance, as well as improvement plans and significant future activities.
29. Based on the information obtained through CNSC compliance inspections, RMCC's annual compliance reports and event reports, CNSC staff is of the opinion that RMCC has operated the facility safely and is performing satisfactorily with respect to this SCA.
30. CNSC staff reported having established a risk-informed compliance activity plan for RMCC's SLOWPOKE-2 reactor facility, and this plan consists of onsite inspections and desktop reviews of RMCC's submissions required by the licence. CNSC staff noted that these submissions include the annual compliance reports, reportable event investigation reports and any other reports required by the CNSC pursuant to the NSCA and Regulations.

#### 3.3.1 Conduct of Operations

31. With reference to CMD 13-H9.1, RMCC provided a detailed list of operating and maintenance procedures that are implemented at the SLOWPOKE-2 reactor facility. CNSC staff confirmed the adequacy of the facility's programs related to operation and maintenance through routine compliance inspections and desktop reviews.
32. The Commission enquired about RMCC's SLOWPOKE-2 reactor operating hours. A representative from RMCC responded that the reactor is operated approximately six hours a day and five days a week. As per agreements between RMCC, the CNSC and contractors, the RMCC representative added that the reactor is not operated when renovation or construction contractors are within its vicinity.
33. The Commission sought information on RMCC's third-party work with respect to generating revenue. An RMCC representative responded that the neutron radiography facility was financed by the Royal Canadian Air Force and, consequently, RMCC performs non-destructive testing for the Air Force at no charge. Similarly, the RMCC representative added that DND finances certain equipment or device upgrades at the SLOWPOKE facility and RMCC performs experiments at no charge in return.

34. The Commission enquired about the role of the Canadian Association of Laboratory Accreditation (CALA) with respect to inspections. An RMCC representative responded that CALA can issue an external environmental laboratory certification. The RMCC representative added that CALA inspectors are not nuclear specialists but they verify management, paperwork, quality assurance and practices, and environmental monitoring. The RMCC representative noted that CALA, much like CNSC Type-II inspections, issue requirements and notices in which the facility must comply to obtain certification. CNSC staff noted that CALA-issued reports have a separate focus in terms of assessing management systems that are not safety related and these reports are not integrated with CNSC inspections.
35. The Commission sought information on the consistent satisfactory ratings the SLOWPOKE-2 reactors received across all 14 SCAs and the differences amongst facilities. CNSC staff responded that the rating system was systematically applied to all of the SLOWPOKES for the first time for the purpose of the licence application assessments, and explained that in the absence of previous data with respect to the ratings for these facilities, it is difficult to differentiate between a satisfactory and fully satisfactory rating. CNSC staff further responded that there are no significant differences between the SLOWPOKE-2 reactors in terms of design and safety.

### 3.3.2 Event Reporting

36. The licensee is required to report unplanned events and take necessary corrective actions to improve safety and to prevent recurrence of such events. CNSC staff reported that the SLOWPOKE-2 facility at RMCC had no reportable events with respect to the current licence period.

### 3.3.3 Conclusion on Operating Performance

37. Based on the above information, the Commission concludes that the operating performance at the facility provides a positive indication of RMCC's ability to carry out the activities under the proposed licence.

## **3.4 Safety Analysis**

38. The Commission examined issues related to the program areas of Safety Analysis in order to assess the adequacy of the safety margins provided by the design of the facility.
39. 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 preventive measures and strategies in reducing the effects of such hazards. It supports the overall

safety case for the facility.

40. RMCC reported that the SLOWPOKE-2 reactor has safety features that enables it to exhibit self-limiting power and temperature transients to safe levels, without the need for operator intervention, include a negative temperature coefficient of reactivity, low critical mass, limited excess reactivity, and the natural convection cooling design. RMCC noted that in the event that the cadmium control rod fails or the reactor room cannot be entered, cadmium shut down capsules, stored next to each irradiation controller, are used for the auxiliary shutdown system for the reactor. CNSC staff agreed with RMCC.
41. RMCC reported that there is a generic safety analysis for the SLOWPOKE-2 reactor and that site-specific safety analysis is provided in the *SLOWPOKE-2 Facility RMCC Reactor Manual*. RMCC added that the *SLOWPOKE-2 Facility RMCC Reactor Manual* provides measures to respond to postulated scenarios and abnormal situations that could lead to emergency situations. CNSC staff reviewed and accepted RMCC's generic safety analysis, *SLOWPOKE-2 Facility RMCC Reactor Manual*.
42. Based on the information obtained through CNSC compliance inspections, RMCC's annual compliance reports and event reports, CNSC staff is of the opinion that RMCC has operated the facility safely and is performing satisfactorily with respect to this SCA.

#### 3.4.1 Fukushima Follow-up Actions

43. CNSC staff reported that, following the Fukushima accident on March 11, 2011, the CNSC requested that RMCC review the safety of their facility with a focus on external hazards, prevention and mitigation of severe accidents, and emergency preparedness, and to report on measures to address any gaps in implementation plans. CNSC staff confirmed that RMCC responded to this request and accepted RMCC's conclusions that adequate measures are in place for the prevention and mitigation of accidents that might impact safety of the facility. CNSC staff stated that no actions on this matter are outstanding.

#### 3.4.2 Conclusion on Safety Analysis

44. On the basis of the information presented, the Commission concludes that the systematic evaluation of the potential hazards and the preparedness for reducing the effects of such hazards is adequate for the operation of the facility and the activities under the proposed licence.

### 3.5 Physical Design

45. Physical design relates to activities that impact on the ability of structures, systems and components to meet and maintain their design basis given new information arising over time, planned modifications to the facility and taking changes in the external environment into account.
46. Overall, RMCC reported that there have been no significant changes to the physical design of the SLOWPOKE-2 reactor facility since the Neutron Beam Tube installation in 1997. CNSC staff concurred with RMCC.
47. RMCC noted that general improvements were made to the SLOWPOKE-2 facility for both aging structures and for improvements. RMCC reported that such upgrades and improvements consisted of the replacement of the chiller in the pool water with two heat pumps, the relocation of several electrical panels for improved security purposes, and the replacement of the equipment rack for the digital reactor regulating system by two racks to improve accessibility. RMCC added that the physical changes did not trigger any safety risks.
48. CNSC staff reported that physical design is maintained during the implementation of RMCC's Life Cycle Management and Maintenance Plan and the ongoing work for the infrastructure of the SLOWPOKE-2 facility. CNSC staff noted that changes to the facility are controlled as per the facility change control process documentation in the Quality Assurance Manual.
49. With respect to the assessment and information obtained through compliance inspections, annual compliance reports and event reports, CNSC staff is of the opinion that RMCC is performing satisfactorily in regards to this SCA.
50. The Commission sought information from CNSC staff on the design standards of the SLOWPOKE reactors that would enable common safety analyses, training development programs or aging management. CNSC staff responded that Atomic Energy of Canada Limited (AECL) was originally responsible for the development of the SLOWPOKE reactor safety analysis, and that specific safety analyses were developed to adapt to changes in each facility. CNSC staff also noted that aging management and training programs are specific to each SLOWPOKE facility. CNSC staff added that in regards to the similarities in the licence applications, CNSC staff highly encouraged the SLOWPOKE licensees to use the application guides that follow the safety and control area framework to facilitate systematic evaluation by CNSC staff.
51. On the basis of the information presented, the Commission concludes that the design of the SLOWPOKE-2 reactor facility is adequate for the operation period included in the proposed licence.

### 3.6 Fitness for Service

52. Fitness for service covers activities that are performed to ensure the systems, components and structures at SLOWPOKE-2 reactor facility continue to effectively fulfill their intended purpose. The activities include maintenance, equipment fitness for service and aging management.

#### 3.6.1 Maintenance

53. RMCC reported that preventative maintenance is implemented as per the requirements of its Procedures Manual, *CPSR-362, SLOWPOKE-2 Nuclear Reactor Operation and Routine Maintenance*. RMCC added that its Procedures Manual is supplemented by several procedures for daily, weekly, monthly and annual maintenance activities to detect aging and confirm fitness for service.
54. CNSC staff noted that routine maintenance includes activities such as operability checks, radiation monitor readings, pool and reactor water sampling, analysis, and purification, and replacement of deionizer columns.
55. RMCC reported that nuclear maintenance on the reactor may only be conducted by, or under the direct supervision of, a person certified by the CNSC as a reactor engineer or reactor technician. RMCC stated that Atomic Energy of Canada Limited (AECL) is the SLOWPOKE-2 reactor manufacturer and supplier who also provides servicing and maintenance. RMCC added that only certified reactor engineers and technicians from AECL service the SLOWPOKE-2 reactor. CNSC staff concurred with RMCC.
56. The Commission sought information regarding potential impacts on the operation of SLOWPOKE reactors if AECL discontinues their maintenance services. An RMCC representative responded that the SLOWPOKE reactor could be operated safely until the fuel is exhausted, whereby the reactor would then be decommissioned. The RMCC representative further stated that hiring maintainers from other countries or certifying, through the CNSC, RMCC's reactor maintainers and reactor engineers are also options for future operation. CNSC staff noted that they are monitoring the situation. The RMCC representative and CNSC staff are satisfied with AECL's letter of commitment to service the SLOWPOKE reactor until 2019.
57. The Commission enquired as to what services AECL provides to SLOWPOKE reactors. CNSC staff responded that AECL provides two services including maintenance (addition of beryllium plates or shims) and refuelling the reactor core. CNSC staff noted that these services are administered by certified technicians and nuclear engineers. CNSC staff added that there would be no safety concerns if AECL no longer services the SLOWPOKE reactors in the future but that operations would be limited.

58. The Commission enquired if a consulting advisory committee has been established amongst the SLOWPOKE facilities. The Commission was informed that there is a SLOWPOKE Users Group and that members of this group communicate several times a year by email and meet on occasion.
59. Relating to the maintenance of the reactor by AECL, the Commission enquired on the possibility of a hold point to be issued for 2019-2020. CNSC staff responded that it would be difficult to define a specific time with respect to a hold point as the remaining usage of the core depends on the frequency of operation. CNSC staff reiterated that there would not be any safety concerns if the reactor core's fuel is completely spent as the reactor could no longer be in operation. Also, CNSC staff noted that the lack of a maintainer such as AECL would not raise any safety concerns but would limit future operations. CNSC staff further responded that their planned annual reports to the Commission would serve as mechanism to provide updates on upcoming issues such as AECL's organization restructuring as well as fuelling and refuelling requirements for each of the SLOWPOKE facilities.

### 3.6.2 Equipment Fitness for Service

60. During the licence period, RMCC reported that surveillance, on-demand maintenance and scheduled maintenance were performed as required to ensure that the facility's systems and components remain effective over time. CNSC staff agreed with RMCC.
61. RMCC stated that the current status of systems, structures and components and the data associated with their fitness for service is reviewed annually at a meeting of the SLOWPOKE-2 Committee.
62. CNSC staff reported that its review of the RMCC SLOWPOKE-2 facility's Annual Compliance Reports and results from the CNSC's routine compliance inspections confirm the fitness for service of the reactor's systems and components.
63. The Commission sought further information on inspections of the SLOWPOKE-2 reactors. CNSC staff responded that the licensee monitors the reactor on a regular basis and that CNSC staff perform regular visual inspections. CNSC staff added that only AECL staff, certified technicians and reactor engineers are authorized to open the reactor vessel to perform visual inspections and that CNSC staff coordinate their inspections to observe this activity.
64. CNSC staff stated that reactor equipment and systems are monitored and maintained on a regular basis in accordance with RMCC's SLOWPOKE-2 reactor's surveillance and maintenance programs as required by the licence.

### 3.6.3 Aging Management

65. Following a request of the Commission from the 2003 licence renewal, RMCC submitted to CNSC staff information on the condition of reactor structure systems and components for the facility, with consideration of aging and degradation mechanisms. CNSC staff agreed with RMCC's conclusions and found the plans for continued operation acceptable.
66. RMCC reported that the long term future plans to address aging management are summarized in the formal Life Cycle Maintenance and Management Plan (LCMM). Furthermore, RMCC noted that upgrades to the reactor facility are being implemented to adhere to the LCMM plan. CNSC staff noted that RMCC initiated an extensive renovation project in 2012 to upgrade building infrastructure that houses the reactor. RMCC stated that the renovation project is expected to be completed by July 2013.
67. CNSC staff reported that the original low-enriched uranium core of the SLOWPOKE-2 facility is expected to last until approximately 2020, and the LCMM plan currently extends to 2020. Nearing 2020, CNSC staff noted that a decision will be made by RMCC whether to refuel the core or to decommission the facility. CNSC staff added that a condition was introduced in the proposed licence for RMCC to submit, to the Commission, a plan for end of operation or continued operation by 2018.
68. RMCC reported that their SLOWPOKE-2 Reactor facility is undergoing renovations to meet industry standards for HVAC, fire protection, disability accessibility, communications and seismic infrastructure support.
69. CNSC staff reported that RMCC's work plan for the upgrade to the SIRCIS digital control system was reviewed, followed by an on-site inspection. From their review, CNSC staff determined that clarification was required with regards to acceptance criteria, improvements to validation and performance of the change process. CNSC staff noted that RMCC updated the work plan, addressing CNSC staff's comments.
70. Based on the above information, CNSC staff determined that RMCC is taking proper consideration of material and component aging in its maintenance and surveillance activities for the facility, and that safe and reliable operation can be expected until the end of the proposed licence period.
71. In regards to the expectation that RMCC's SLOWPOKE-2 reactor's uranium core would last until 2020, the Commission sought information on the anticipated end-of-life date of the reactor and the request for a 10-year licence. An RMCC representative responded that RMCC intends to refuel the core of the SLOWPOKE-2 reactor and does not plan to decommission. The RMCC representative noted that RMCC has already started the majority of the paperwork that is required by DND for an application to fund the refuelling of the core. The RMCC representative added that RMCC is learning from the SLOWPOKE reactor facility in Jamaica which is scheduled for refuelling its reactor in 2014. CNSC staff noted that refuelling has been done before and that École

Polytechnique de Montréal has refuelled its SLOWPOKE-2 reactor core.

72. With regards to aging management, the Commission asked for information on the areas of concern with respect to the SLOWPOKE-2 reactor equipment and how these areas are monitored. CNSC staff responded that the majority of the reactor components can be monitored directly or indirectly by certified staff during weekly maintenance where staff measure radiation fields and samples the reactor pool water. CNSC staff noted that highly enriched uranium cores (HEU-core) tend to be more porous, older and more susceptible to aging than low enriched uranium cores (LEU-core). CNSC staff added that there are no safety concerns with respect to the aging of the SLOWPOKE-2 reactor.
73. The Commission enquired about the seismic bracings that were installed as part of RMCC's renovations project. A representative from RMCC responded that DND initiated the structural upgrade as part of its seven-year program to modernize its governed facilities and to follow building, electrical and HVAC standards. The RMCC representative noted that the architects and engineers determined that an additional storey would be required to house the new HVAC equipment and therefore recommended the installation of seismic bracing after completing a seismic study of the SLOWPOKE-2 reactor facility.

#### 3.6.4 Conclusion on Fitness for Service

74. The Commission is satisfied with RMCC's programs for the inspection and life-cycle management of key safety systems. Based on the above information, the Commission concludes that the equipment as installed at the SLOWPOKE-2 reactor facility is fit for service.
75. The Commission invites all SLOWPOKE owners to meet in order to determine the preferred method for ensuring the maintenance of these reactors once AECL's commitment to service expires in 2019.

### **3.7 Radiation Protection**

76. As part of its evaluation of the adequacy of the provisions for protecting the health and safety of persons, the Commission considered the past performance of the SLOWPOKE-2 facility in the area of radiation protection. The Commission also considered the SLOWPOKE-2 facility's program to ensure that both radiation doses to persons and contamination are: monitored, controlled, and kept as low as reasonably achievable (ALARA), with social and economic factors taken into consideration.
77. RMCC reported that access control, security checks and dose rate surveys are implemented at the SLOWPOKE-2 reactor facility. CNSC staff stated that measures are in place to monitor and control radiological hazards, including fixed area alarming monitors. RMCC noted that if any area demonstrates a dose rate exceeding 0.0025

mSv, the area is immediately cordoned off, secured, and posted with the appropriate signage until further corrective actions may be taken.

78. CNSC staff reported that RMCC requires measures to control surface contamination from unsealed radioactive material that workers may be required to handle. CNSC staff added that the control of surface contamination is applied through the application of designated work areas using appropriate equipment. CNSC staff reported that these designated areas are surveyed to ensure that the dose rates are below expected levels.
79. CNSC staff is of the opinion that RMCC is performing satisfactorily in the SCA of Radiation Protection and that RMCC has developed and implemented an acceptable radiation protection program that complies with CNSC expectations and regulatory requirements.
80. RMCC reported that they maintain and implement a radiation protection program that adheres to the Department of National Defence's (DND) *Radiation Safety, RMCC Standing Orders and Instructions* as well as CNSC's *Radiation Protection Regulations*. CNSC staff confirmed that compliance inspections demonstrated that RMCC's radiation protection program is compliant with CNSC's regulatory requirements.
81. RMCC reported that, pursuant to their RP program, measures are in place to maintain and control doses to workers. RMCC stated that all personnel are required to successfully complete an in-house radiation safety training course, wear a thermoluminescent dosimeter (TLD) badge, neutron badge, and personal alarming dosimeters, and maintain log books on-site.
82. RMCC stated that the TLD and neutron badges are read by Health Canada on a quarterly basis and that all nuclear energy workers (NEWs) receive their dosimetry results in writing. RMCC reported that all non-NEWs are notified in writing if their dosimetry results exceeded RMCC's action level for non-NEWs. RMCC noted that the last quarter of the 2012 dosimetry report was not yet available for the purpose of the licence renewal application.
83. RMCC stated that there were no incidents where a worker exceeded the regulatory effective dose limits of 50 mSv/yr for a NEW and 1 mSv/yr for a non-NEW. CNSC staff concurred with RMCC. RMCC also reported that there were no reportable dose limits that exceeded the RMCC action levels.
84. RMCC reported that the estimated maximum radiation dose from all releases from the SLOWPOKE-2 reactor is 0.013 millisieverts (mSv) for 200 days of operation at half power. CNSC staff reported that the estimated dose to the public is below 0.000085 millisieverts (mSv) per year which is well below the regulatory limit of 1 mSv/yr for members of the public.
85. The Commission asked what fraction of worker radiation exposure would result from gamma versus neutron radiation. An RMCC representative responded that the

operators are shielded while radiology is in progress and, therefore, the largest fraction of the dose results from gamma radiation.

86. The Commission sought clarification as to why the maximum individual dose is increasing with time and why effective doses to RMCC workers were not reported for 2012. A representative from RMCC responded that the nature of the activities at the RMCC SLOWPOKE facility impacted the doses to its workers and that particular research projects requiring open-source work caused the maximum individual dose to increase in 2011. The RMCC representative further responded that there was a decrease in activity at the facility in 2012 due to renovations. RMCC received the effective doses for 2012 but all readings were below the minimum reportable level.
87. The Commission enquired about the dosimeter submission process with respect to Health Canada. A representative from RMCC responded that the dosimeters are sent to Health Canada every three months and Health Canada returns the dosimeters to RMCC after approximately two to three weeks. The RMCC representative added that personnel working within the SLOWPOKE facility wear personal alarming dosimeters to monitor and log exposures daily.
88. The Commission enquired as to why the individual doses to workers for 2012 were not available in either CNSC or RMCC's CMD. A representative from RMCC responded that, at the time that the licence application was due to the CNSC, the dose information for the first six months of 2012 was submitted to the CNSC. CNSC staff responded that RMCC submits an annual compliance report to the CNSC in June of every year that includes the complete set of individual doses to workers for the previous calendar year.
89. The Commission is of the opinion that, given the mitigation measures and safety programs that are in place or will be in place to control hazards, RMCC will provide adequate protection to the health and safety of persons, the environment and national security.

### **3.8 Conventional Health and Safety**

90. Conventional health and safety covers the implementation of a program to manage workplace safety hazards. This program is mandatory for all employers and employees in order to reduce the risks associated with conventional (non-radiological) hazards in the workplace. This program includes compliance with Part II of the *Canada Labour Code*<sup>4</sup> and conventional safety training.
91. Conventional health and safety covers the implementation of a program to manage workplace safety hazards.
92. RMCC reported that, as part of the DND, they follow the *DND General Safety Program Policy and Program*, volumes 1, 2, & 3, as well as the occupational health

---

<sup>4</sup> R.S.C., 1985, c. L-2

and safety rules and regulations stipulated by Part II of the *Canada Labour Code*.

93. RMCC reported that the Academic Wing of RMCC Joint Occupational Safety and Health Committee interpret and make appropriate policies in line with policies of DND. CNSC staff concurred with RMCC.
94. RMCC stated that all new SLOWPOKE-2 personnel must receive Workplace Hazardous Materials Information System (WHMIS) training.
95. RMCC reported that there have been no lost time injuries at the SLOWPOKE-2 reactor facility in the last 28 years of operation. CNSC staff agreed with RMCC.
96. Based on the information obtained through CNSC compliance inspections, RMCC's annual compliance reports and event reports, CNSC staff determined that RMCC is performing satisfactorily with respect to this SCA.
97. The Commission is of the opinion that the health and safety of workers and the public was adequately protected during the operation of the facility for the current licence period, and that the health and safety of persons will also be adequately protected during the continued operation of the facility.

### **3.9 Environmental Protection**

98. Environmental protection covers RMCC's programs to identify, control and monitor all releases of nuclear substances and to minimize the effects on the environment which may result from the licensed activities. It includes effluent and emissions control, environmental monitoring, and estimated doses to the public.

#### 3.9.1 Environmental Management System

99. RMCC reported that the Environmental Management System (EMS) was developed to conform to all relevant policy requirements and to assist with the facility's ability to meet legislative, Treasury Board, departmental, and other environmental requirements and standards.
100. RMCC described in detail the roles and responsibilities of personnel with respect to the management of RMCC's environmental protection and procedures. CNSC staff added RMCC's internal document *Environmental Protection, RMCC Standing Orders and Instructions* defines these roles and responsibilities and that the SLOWPOKE-2 facility must adhere to RMCC's *Defence Administrative Orders and Directives, Hazardous Materials Management*.

### 3.9.2 Effluent and Emissions Control

101. CNSC staff reported that gaseous fission products are produced in the reactor fuel and very small amounts (Argon-41 and Xenon products) migrate to the reactor container headspace, and are released to the environment during weekly purges. CNSC staff noted that there are no sources of ignition in the reactor container gas space, and consequently, there are no hazards to the reactor or persons above the reactor. RMCC added that quality control provisions are ensured by allowing 48 hours prior to purging for the radioactive gases to decay prior to release. RMCC added that gamma ray spectroscopy is performed periodically on head space purge gases.
102. RMCC reported that their SLOWPOKE-2 facility does not release any radioactive liquid effluents during normal operation.
103. CNSC staff reported that the radioactive water from routine maintenance and testing is stored and re-used as make-up for the reactor container.
104. CNSC staff reported that non-radioactive hazardous substances are stored and handled in accordance with WHMIS at the SLOWPOKE-2 facility and that it is the responsibility of the Technical Officer in the Department of Chemistry and Chemical Engineering to provide support with respect to handling hazardous materials accordingly.
105. CNSC staff is of the opinion that RMCC has in place environmental protection measures and practices that comply with CNSC expectations and that this SCA is rated as satisfactory.

### 3.9.3 Conclusion on Environmental Protection

106. Based on the above information, the Commission is satisfied that, given the mitigation measures and safety programs that are in place to control hazards, RMCC will provide adequate protection to the health and safety of persons and the environment.

## **3.10 Emergency Management and Fire Protection**

107. Emergency management and fire protection covers the provisions for preparedness and response capabilities which exist for emergencies and for non-routine conditions at the SLOWPOKE-2 reactor facility. This includes nuclear emergency management, conventional emergency response, and fire protection and response.

### 3.10.1 Emergency Management

108. CNSC staff reported that RMCC's emergency management organization, policies,

processes and procedures are defined in RMCC's Fire Protection Program (FPP), which was submitted to the CNSC in 2011, and RMCC's internal document *Realty Asset Management Manual, Policy, Directives, Orders and Standards*.

109. CNSC staff noted that RMCC has measures in place to address abnormal and emergency events, and the potential impact on the public and the environment from postulated emergency conditions is minimal.

### 3.10.2 Fire Protection

110. RMCC reported that the purpose of the Fire Protection Program (FPP) at the SLOWPOKE-2 facility at RMCC is to minimize both the probability of occurrence and the consequences of fire at the SLOWPOKE-2 facility. RMCC added that the FPP ensures the maintenance, implementation and control of activities related to fire safety by various departments including the Chemistry & Chemical Engineering Department with the RMCC and the Fire Department at the Canadian Forces Base (CFB) in Kingston, Ontario. Furthermore, the FPP is responsible for reducing the risks of a radiological release to the public, the protection of SLOWPOKE-2 personnel and minimizing SLOWPOKE-2 operation interruption in the event of a fire.
111. RMCC reported that a revision of its FPP was submitted to the CNSC. CNSC staff confirmed that RMCC's revised SLOWPOKE-2 facility FPP complies with regulatory requirements such as CNSC's *General Nuclear Safety and Control Regulations*, the National Fire Code of Canada and the National Building Code of Canada. CNSC staff added that the FPP identifies the procedures and processes necessary to demonstrate a planned, coordinated and controlled approach to fire protection at the facility.
112. Based on their review, CNSC staff reported that RMCC met and will continue to meet regulatory requirements with respect to emergency preparedness. CNSC staff is of the opinion that RMCC's performance with respect to this SCA is satisfactory.
113. The Commission sought information on issues regarding fire protection, particularly for the duration of the renovations at RMCC's SLOWPOKE facility. A representative from RMCC responded that the fire system in the SLOWPOKE facility was upgraded, and that the local fire department promptly responds to fire alarms. CNSC staff responded that they verified that measures were in place to ensure that there was continued protection throughout the renovation period.

### 3.10.3 Conclusion on Emergency Management and Fire Protection

114. Based on the above information, the Commission concludes that the fire protection measures and emergency management preparedness programs in place, and that will be in place, at the facility are adequate to protect the health and safety of persons and the environment.

### 3.11 Waste Management

115. Waste management covers the licensee's site-wide waste management program. CNSC staff evaluated RMCC's performance with regards to waste minimization, segregation, characterization and storage.
116. RMCC reported that they maintain a waste management program that minimizes the generation of radioactive waste. RMCC noted that all waste generated is appropriately handled and disposed of to minimize the risk to staff, members of the public and the environment.
117. CNSC staff reported that the operation of the SLOWPOKE-2 facility generates laboratory waste resulting from daily operations and wastes associated with the reactor components. CNSC staff added that there is no spent fuel generated. CNSC staff noted that the radioactive waste is usually present in the form of used personal protective equipment and laboratory materials such as used radiation vials and pipettes.
118. RMCC reported that the waste management program is administered in accordance with conditions set by the CNSC, Directorate General of Environmental and Nuclear Safety (DGENS), Chief of Military Personnel (CMP), RMCC Radiation Safety Policy, federal, provincial and municipal waste regulations. CNSC staff concurred with RMCC.
119. RMCC reported that the majority of the produced waste is generated by neutron activation analysis at the SLOWPOKE-2 facility. RMCC noted that the waste is safely stored and left to decay to background radiation levels before it is disposed as municipal waste or as non-hazardous material. RMCC added that any mixed bed resin from the Reactor Container Deionizer Unit will be sent to AECL at Chalk River.
120. RMCC reported that hazardous materials and dangerous goods are released by the SLOWPOKE-2 facility to RMCC's Department of Chemistry & Chemical Engineering for appropriate waste disposal as per the RMCC Safe Operating Procedure Radiation Safety Manual Policy #3 (revision January 2011) for low-level waste. CNSC staff added that, for shipping and transportation of hazardous substances, the RMCC's Department of Chemistry & Chemical Engineering's Technical Officer follows the directions of the Environmental Safety Officer for the Canadian Forces Base located in Kingston, Ontario.
121. CNSC staff reported that they are satisfied with the RMCC Waste Management Practices and that RMCC is performing satisfactorily with respect to this SCA.
122. Based on the above information and considerations, the Commission is satisfied that RMCC is safely managing waste at its SLOWPOKE-2 reactor facility.

### 3.12 Security

123. The specific areas that comprise this SCA cover the program required to implement an acceptable security program at the Royal Military College of Canada (RMCC) SLOWPOKE-2 facility. This includes compliance with the provisions of the *General Nuclear Safety and Control Regulations* and the *Nuclear Security Regulations*.
124. The *General Nuclear Safety and Control Regulations* requires that the 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. Precautions to protect the environment and the health and safety of persons and to maintain the security of the SLOWPOKE-2 facility and of associated nuclear substances are as documents in the *Nuclear Security Regulations*.
125. RMCC reported that there are several physical security measures in place at the SLOWPOKE-2 reactor facility with respect to their security program. RMCC noted that the physical security of the facility and the security program have undergone continuous improvements since the security attack on September 11, 2001, in New York City. CNSC staff added that, following recent inspections, security findings were not identified. Furthermore, CNSC staff noted that the SLOWPOKE-2 facility is undergoing building renovations and that acceptable security measures have been implemented for the duration of the construction.
126. CNSC staff reported that the facility has implemented required security measures including a security awareness program, facility access control and intrusion detection. CNSC staff added that RMCC's SLOWPOKE-2 facility security plan is in accordance with regulatory requirements, is found to be acceptable, and is performing satisfactorily with respect to this SCA.
127. The Commission sought information on the incompatibilities between the CNSC and RMCC's security requirements for establishing secure electronic communications. An RMCC representative responded that there is a direct incompatibility between the Department of National Defence (DND) and the CNSC's security system that has yet to be resolved. CNSC staff further responded that, currently, a secure communication system with the International Atomic Energy Agency (IAEA) is also being developed. CNSC staff noted that the information technology issues are undergoing development and that in the meantime CNSC is hosting webinars on safeguards to assist in establishing secure electronic communication.
128. The Commission is satisfied that RMCC's performance with respect to maintaining security at the facility has been acceptable. The Commission concludes that RMCC has made adequate provisions for ensuring the physical security of the facility, and is of the opinion that RMCC will continue to make adequate provisions during the proposed licence period.

### 3.13 Safeguards

129. The CNSC's regulatory mandate includes ensuring conformity with measures required to implement Canada's international obligations under the Treaty on the Non-Proliferation of Nuclear Weapons. Pursuant to the Treaty, Canada has entered into safeguards agreements with the IAEA. The objective of these agreements is for the IAEA to provide credible assurance on an annual basis to Canada and to the international community that all declared nuclear material is in peaceful, non-explosive uses and that there is no undeclared nuclear material or activities in this country.
130. CNSC staff reported that the scope of the non-proliferation program for the RMCC SLOWPOKE-2 reactor is limited to the tracking and reporting of foreign obligations and origins of nuclear material. CNSC staff further noted that this tracking and reporting assists the CNSC in the implementation of Canada's bilateral Nuclear Cooperation Agreements with other countries.
131. RMCC reported that their safeguards program complies with licence requirements and CNSC regulatory document RD-336, *Accounting and Reporting of Nuclear Material*. CNSC staff concurred with RMCC.
132. RMCC reported that monthly and annual reports are submitted to the CNSC with respect to RMCC's nuclear material inventory. CNSC staff added that, with respect to CNSC and IAEA inspections, RMCC provided the necessary access and assistance to perform the required activities, and complied with all regulatory requirements. CNSC staff noted that there were no reportable events or action notices issued during the licensing period.
133. CNSC staff is of the opinion that the RMCC SLOWPOKE-2 facility has an acceptable safeguards program and is performing satisfactorily with respect to this SCA.
134. Based on the above information, the Commission is satisfied that RMCC has made and will continue to make adequate provisions in the areas of safeguards and non-proliferation at the SLOWPOKE-2 facility that are necessary for maintaining national security and measures necessary for implementing international agreements to which Canada has agreed.

### 3.14 Packaging and Transport

135. Packaging and transport covers the safe packaging and transport of nuclear substances to and from RMCC's SLOWPOKE-2 facility. RMCC's SLOWPOKE-2 facility must adhere to the *Packaging and Transport of Nuclear Substances Regulations*<sup>5</sup> and Transport Canada's *Transportation of Dangerous Goods Regulations*<sup>6</sup> (TDG) for all shipments leaving the site. The *Packaging and Transport of Nuclear Substances* apply

---

<sup>5</sup> SOR/2000-208

<sup>6</sup> SOR/2001-286

to the packaging and transport of nuclear substances, including the design, production, use, inspection, maintenance and repair of packages, and the preparation, consigning, handling, loading, carriage and unloading of packages containing nuclear substances.

136. RMCC reported that the Facility Director and the Radiation Safety Officer (RSO) maintain their certification in processing TDG Class 7 goods. RMCC added that the RSO maintains all documentation related to packaging and transportation of all material pertinent to TDG Class 7, radioactive material, and that these records are inspected annually by the CNSC as part of the inspection for the consolidated licence.
137. RMCC reported that radioactive material packaged by the RMCC RSO is transported from the facility fewer than 10 times annually by a commercial courier. RMCC noted that the licensed package contents are only slightly above exemption quantities.
138. CNSC staff reported that there were no reported packaging and transport related incidents and no issues with non-compliance during the licensing period. CNSC staff is of the opinion that RMCC has operated the facility safely and is performing satisfactorily with respect to this SCA.
139. Base on the above information, the Commission is satisfied that RMCC is meeting regulatory requirements regarding packaging and transport.

### **3.15 Application of the *Canadian Environmental Assessment Act***

140. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act, 2012*<sup>7</sup> (CEAA 2012) have been fulfilled.
141. CNSC staff reported that it had completed an Environmental Assessment (EA) determination under the CEAA 2012. RMCC reported that the application to renew the non-power reactor operating licence is not classified as a “designated project” pursuant to the *Regulations Designating Physical Activities* made under paragraph 84(a) of the CEAA 2012. Therefore, CNSC staff determined that the CNSC is not considered a responsible authority pursuant to paragraph 15(a) of the CEAA 2012 and no federal EA is required.
142. The Commission is satisfied that no federal EA is required in this case. The Commission notes that the NSCA provides a strong regulatory framework for environmental protection. Whether an EA is required or not, the CNSC regulatory system ensures that adequate measures are in place to protect the environment and human health in accordance with the NSCA and its Regulations.

---

<sup>7</sup> S.C. 2012, c. 19, s.52

### 3.16 Aboriginal Engagement

143. The common law Duty to Consult with Aboriginal communities and organizations applies when the Crown contemplates actions that may adversely affect established or potential Aboriginal or treaty rights.
144. RMCC reported that the Canadian Forces created the Aboriginal Opportunity Leadership Year (ALOY) in August of 2008 to provide a military education and learning experience for members of aboriginal communities in Canada where ALOY students are exempt from tuition and book fees. RMCC added that successful ALOY students may apply to RMCC for employment as an Officer Cadet.
145. RMCC noted that the CNSC notified aboriginal groups in the surrounding regions of RMCC of RMCC's proposed licence renewal application. CNSC staff reported having notified the Algonquins of Ontario, Mohawks of the Bay of Quinte First Nations (Upper Canada Treaties), Association of Iroquois and Allied Indians, and the Métis Nation of Ontario with information on the licence application and the public hearing process. CNSC staff added that follow-up calls were conducted to ensure letters were received and to answer questions.
146. CNSC staff is of the opinion that activities related to the non-power reactor operating licence are not expected to cause an adverse impact to any potential or established Aboriginal or treaty rights.
147. The Commission enquired if there were any Aboriginal or First Nations concerns with respect to RMCC's application to renew its licence. An RMCC representative responded that RMCC did not receive any feedback, positive or negative, from any Aboriginal or First Nations groups. CNSC staff responded that the CNSC engaged interested stakeholders by communicating over the telephone and in writing by sending the pertinent Commission Member Documents (CMDs). CNSC staff added that there were no concerns or questions raised.
148. Based on this information, the Commission acknowledges RMCC's efforts made in relation to the CNSC's obligations regarding Aboriginal consultation and the Legal Duty to Consult.

### 3.17 Public Information Program

149. A public information program is a regulatory requirement for licence applicants and licensed operators of Class I nuclear facilities, such as SLOWPOKE-2 reactors. Paragraph 3(j) of the *Class I Nuclear Facilities Regulations*<sup>8</sup> requires that licence applications include "*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*

---

<sup>8</sup> SOR/2000-204

*environment and the health and safety of persons that may result from the activity to be licensed.”*

150. RMCC reported that the SLOWPOKE-2 facility has a Public Information Officer and a Public Information Program for RMCC whereby the Public Information Officer provides a liaison between the community and RMCC.
151. RMCC noted that the SLOWPOKE-2 facility has participated in a number of events including Science Rendezvous and public, private and educational tours. An open house was held in May 2011 for the 25<sup>th</sup> Anniversary of the SLOWPOKE-2 facility where lectures were presented by guest speakers and members of the public were invited to attend. RMCC added that any SLOWPOKE-2 facility public involvement is publicised on the radio, television, newspapers, posters and via RMCC’s web site.
152. CNSC staff reported that RMCC is currently updating its program to meet the applicable sections of RD/GD-99.3, *Public Information and Disclosure*. CNSC staff added that they will continue to monitor the RMCC’s process and compliance with the applicable requirements of RD/GD-99.3.
153. CNSC staff commented that RD/GD 99.3 was a generic document, and that they have worked with the CNSC communications group to better define their expectations in this regard for each category of licensee, with the implementation of new requirements following a graded approach.
154. The Commission expressed the view that the public information program seems incomplete, and asked for opinions on this topic. The RMCC representative provided details on their public information activities, including tours of the facility and participation to a local science fair. The RMCC representative stated that they are doing their best to inform the local community. CNSC staff commented that RD/GD 99.3 was a generic document, and that they have worked with the CNSC communications group to better define their expectations in this regard for each category of licensee, with the implementation of new requirements following a graded approach.
155. CNSC staff noted their willingness to discuss with the licensee on the topic of increased work load related to the new public information requirements, taking into account that there are essential elements to be included in a public information program. The Commission commented that part of the CNSC’s mandate is to disseminate factual information to the public about nuclear science, and the licensees public information programs is one way for the Commission to fulfill this mandate. The Commission considers that hiding information that should have been disclosed is a behaviour that should be avoided.
156. Based on this information, the Commission is satisfied that RMCC’s public information program meets regulatory requirements and is effective in keeping the public informed on the facility operations.

### **3.18 Decommissioning Plans and Financial Guarantee**

157. The Commission requires that the licensee has operational plans for decommissioning and long-term management of waste produced during the life-span of the facility. In order to ensure that adequate resources are available for a safe and secure future decommissioning of the SLOWPOKE-2 reactor site, the Commission requires that an adequate financial guarantee for realization of the planned activities is put in place and maintained in a form acceptable to the Commission throughout the licence period.
158. CNSC staff reported that RMCC revised its decommissioning plan for the SLOWPOKE-2 facility and CNSC staff determined that the plan meets the requirement of CSA Standard *Decommissioning of Facilities Containing Nuclear Substances*, N294-09.
159. RMCC reported that the Deputy Minister of National Defence is responsible for the financial guarantee for the future decommissioning of the SLOWPOKE-2 reactor facility which is supported by a letter dated August 24, 2012. CNSC staff confirmed receipt of the DND's letter.
160. The Commission sought information regarding the guarantor, the Deputy Minister of National Defence, for RMCC's decommissioning financial guarantee. CNSC staff responded that verification by the guarantor is required to ensure that the financial guarantee amount has been acknowledged, and the financial guarantee for RMCC is 6.3 million dollars.
161. CNSC staff reported that they are satisfied that RMCC's Financial Guarantee meets the criteria of CNSC Regulatory Guide G-206, *Financial Guarantees for Decommissioning of Licensed Activities*.
162. With respect to the removal and shipping costs associated with neutron sources, the Commission enquired if the estimated expenses were included in RMCC's financial guarantee. An RMCC representative confirmed that the cost estimates for neutron sources disposal was included in their financial guarantee. The RMCC representative added that the Director General of Environment and Nuclear Safety agreed to finance the disposal of RMCC's radioactive waste.
163. Based on this information, the Commission considers that the decommissioning plans and related financial guarantee are acceptable for the purpose of the current application for licence renewal.

### **3.19 Nuclear Liability Insurance and Cost Recovery**

164. RMCC is an integral unit of the Federal Department of Defence, which is owned by the

Federal Government of Canada. The Federal Government of Canada self-insures. Commercial insurance companies are not permitted to be involved. Any liability issues are processed within the Federal Department of the Judge Advocate General (JAG). CNSC staff concurred with RMCC's statement.

165. RMCC reported that it is exempt from the CNSC *Cost Recovery Fees Regulations* as it is a university.
166. CNSC staff confirmed that RMCC is a specified educational institution as defined in subsection 2(1) of the *Canada Student Loans Act* and is exempt from the CNSC *Cost Recovery Fees Regulations*.

### **3.20 Licence Length and Conditions**

167. RMCC requested the renewal of the current operating licence for a period of 10 years. CNSC staff recommended the renewal of the licence for a period of 10 years, stating that RMCC is qualified to carry on the licensed activities authorized by the licence.
168. The Commission sought information regarding the laboratory reclassification following the completion of the renovations at the RMCC SLOWPOKE-2 reactor facility. CNSC staff responded that it is not uncommon for facilities under consolidated licenses to reclassify or create new labs. CNSC staff explained that there is an authorization process involved and the CNSC is currently reviewing RMCC's application to reclassify a laboratory from a basic level to intermediate.
169. The Commission sought comments from SLOWPOKE licensees on the CNSC's transition from licence conditions to the LCH. The Commission was informed that the SLOWPOKE facilities had the opportunity to review three draft LCHs and found that, while they find the LCH useful in detailing how to meet regulatory requirements and intend on doing their best to comply with the LCH, this document was overwhelming and the administrative and technical conditions and requirements are complex and not necessarily applicable to the SLOWPOKE facilities. CNSC staff further noted that the graded approach was applied to the development of the LCH to specify exact licence conditions that apply to each specific licensee.
170. The Commission sought comments on the references in the LCH to documents from the past and asked if updating was required. A representative from RMCC responded that RMCC's SLOWPOKE facility uses the CPSR-362 *SLOWPOKE-2 Nuclear Reactor Operation and Routine Maintenance* 1984/85 manual, but that they also use the SIRCIS Users' Manual for their digital control system which is up-to-date and complementary to the 1984/85 manual. CNSC staff responded that SLOWPOKE facilities do not tend to change significantly over time. Therefore, the 1984/85 document that was produced by AECL is still greatly applicable to current operations and practices. CNSC staff noted that it is common that SLOWPOKE licensees have complementary documents to reflect updates to the SLOWPOKE facilities'

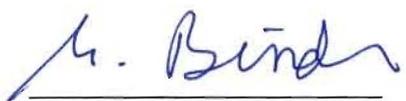
maintenance and operations as required.

171. A representative from RMCC sought information regarding the process by which the NSCA could be amended in order to declassify the SLOWPOKE reactors differently from power reactors. CNSC staff responded that an amendment to regulations under the NSCA is at the discretion of the Commission.
172. Based on the information received during the course of this hearing, the Commission is satisfied that a 10-year licence is appropriate. The Commission accepts the licence conditions as recommended by CNSC staff. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority, and notes that it can bring any matter to the Commission as applicable.
173. The Commission notes the concerns expressed by the SLOWPOKE licensees regarding the length and complexity of the LCH, and invites them to submit proposals to CNSC staff in order to simplify this document.

#### **4.0 CONCLUSION**

174. The Commission has considered the information and submissions of CNSC staff, the applicant and all participants as set out in the material available for reference on the record, as well as the oral and written submissions provided or made by the participants at the hearing.
175. The Commission concludes that an environmental assessment of the proposed continued operation of the facility, pursuant to the *Canadian Environmental Assessment Act*, is not required.
176. The Commission is satisfied that the applicant meets the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*. That is, the Commission is of the opinion that the applicant is qualified to carry on the activity that the proposed licence will authorize and that the applicant will make adequate provision for the protection of the environment, the health and safety of persons and the maintenance of national security and measures required to implement international obligations to which Canada has agreed.
177. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the Royal Military College of Canada's Non-Power Reactor Operating Licence NPROL-20.00/2013 for its SLOWPOKE-2 reactor facility located in Kingston, Ontario. The renewed licence NPROL-20.00/2023 will be valid from July 1, 2013 to June 30, 2023.
178. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 13-H9.

179. The Commission also accepts CNSC staff's recommendation regarding the delegation of authority in the Licence Conditions Handbook (LCH). The Commission notes that CNSC staff can bring any matter to the Commission as applicable. The Commission directs CNSC staff to inform the Commission on an annual basis of any changes made to the LCH.
180. With this decision, the Commission directs CNSC staff to provide annual reports on the performance of the RMCC's SLOWPOKE-2 reactor. CNSC staff shall present these reports at public proceedings of the Commission.



JUN 26 2013

Michael Binder  
President,  
Canadian Nuclear Safety Commission

Date