Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant	University of Alberta
Subject	Application to Renew the Non-Power Reactor Operating Licence for the SLOWPOKE-2 reactor at the University of Alberta
Public Hearing Date	May 15, 2013

Canada

RECORD OF PROCEEDINGS

Applicant:	University of Alberta
Address/Location:	2-51 South Academic Building, Edmonton, Alberta T6G 2G7
Purpose:	Application to renew the Non-Power Reactor Operating Licence for the SLOWPOKE-2 reactor at University of Alberta
Application received:	November 19, 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. J. Barriault A. Harvey R. Velshi M. J. McDill D.D. Tolgyesi
Secretary:	M.A. Leblanc
Recording Secretary:	T. Johnston
Senior General Counsel:	J. Lavoie

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Licence: Renewed

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1.0 INTRODUCTION

1. The University of Alberta (U of A) has applied to the Canadian Nuclear Safety Commission[1] for the renewal of the Non-Power Reactor Operating Licence for a period of 10 years for its SLOWPOKE-2 reactor located in Edmonton, Alberta. The current operating licence NPROL-18.00/2013 expires on June 30, 2013.

2. The U of A Safe Low-Power Kritical Experiment (SLOWPOKE-2) reactor is a small research reactor located in the Dentistry-Pharmacy Building in the U of A campus, in Edmonton, Alberta. The SLOWPOKE-2 reactor has been in operation for 35 years and is used in support research, teaching, neutron activation and isotope production.

Issue

3. In considering the application, the Commission was required to decide, pursuant to subsection 24(4) of the *Nuclear Safety and Control Act*[2] (NSCA):

   a) if the U of A is qualified to carry on the activity that the licence would authorize; and

   b) if, in carrying on that activity, the U of A 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. Pursuant to section 22 of the NSCA, the President of the Commission established a Panel of the Commission to review the application. 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*[3]. During the public hearing, the Commission considered written submissions and heard oral presentations from CNSC staff (CMD 13-H8) and the U of A (CMD 13-H8.1 and CMD 13-H8.1A). 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

[1] 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.
[2] Statutes of Canada (S.C.) 1997, chapter (c.) 9.
[3] Statutory Orders and Regulations (SOR)/2000-211.

sections of this *Record of Proceedings*, the Commission concludes that the U of A is qualified to carry on the activity that the licence will authorize. The Commission is of the opinion that the U of A, 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 University of Alberta's Non-Power Reactor Operating Licence for its SLOWPOKE-2 facility located in Edmonton, Alberta. The renewed licence, NPROL-18.00/2023, 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-H8.

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 the U of A's SLOWPOKE-2 reactor. 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 the U of A'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 the U of A'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. CNSC staff is of the opinion that the performance of the U of A in the Safety and Control Area (SCA) of Management System is satisfactory after verifying aspects of the management system related to personnel capability, use of approved processes, calibration of instruments, document control and records.

3.1.1 Quality Management

12. Following licence renewal in 2003, the U of A reported that they were asked by CNSC staff to revise their quality assurance program to fully meet CNSC requirements. The U of A noted that, in addition to the revised quality assurance program, a number of facility-specific programs were developed with the goal of ensuring that the SLOWPOKE-2 facility continues to meet the requirements of the NSCA and its regulations. CNSC staff confirmed that, in 2009, the U of A's SLOWPOKE-2 reactor's quality assurance program documentation met CNSC staff's expectations.

3.1.2 Organisation

13. The U of A described, in detail, the responsible persons and authorities with respect to the operation of the SLOWPOKE-2 facility. In addition, the U of A provided a chart of the organizational management of the U of A SLOWPOKE-2 facility.

3.1.3 Safety Culture

14. The U of A reported that they are committed to providing a safe environment for its faculty, staff, students, volunteers, contractors and visitors by implementing an effective health and safety management system to support preventative and responsive attitudes at all management levels. The U of A noted that they will continue to enhance their staff knowledge and skills necessary to improve the health and safety culture of the university as per the Government of Alberta's *Occupational Health and Safety Act*.

15. CNSC staff stated that, following a compliance inspection in 2012 conducted at the U of A SLOWPOKE-2 facility, CNSC staff noted areas for improvement related to the implementation of the U of A non-conformance process., CNSC staff noted that these are minor and do not affect the safe operation of the facility.

3.1.4 Conclusion on Management System

16. Based on its consideration of the presented information, the Commission concludes that the U of A has appropriate organization and management structures in place and that the operating performance at the SLOWPOKE-2 reactor facility provides a positive indication of the applicant's ability to adequately carry out the activities under the proposed licence.

3.2 Human Performance Management

17. Human performance management encompasses activities that enable effective human performance through the development and implementation of processes that ensure the licensee's staff have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties.

18. CNSC staff is of the opinion that the implementation of the U of A training program for the SLOWPOKE-2 Reactor Operators and personnel certification performance for this SCA is satisfactory.

3.2.1 Training

19. The U of A reported that the University of Alberta Training Program for SLOWPOKE-2 Reactor Operators (Automatic Mode) is the training program for the U of A operators. The U of A added that this program includes both initial and continuing training and was developed using a graded Systematic Approach to Training (SAT). The U of A noted that the SAT process is the framework endorsed by the CNSC by establishing and maintaining training for workers at nuclear facilities. CNSC staff concurred with the U of A.

20. CNSC staff reported that, at licence renewal in 2003, the U of A was required to update its training program. Following the U of A's program submission in 2008 and regulatory feedback from CNSC staff's reviews, the U of A's revised training program was accepted in 2009 by the CNSC.

21. CNSC staff reported that the 2012 inspection of the training program resulted in one action item pertaining to the use of a document that was not authorized for use by the U of A. CNSC staff noted that the U of A agreed to refrain from using the document until they are authorized. CNSC staff added that this action item does not affect the safe operation of the facility.

22. The Commission sought information regarding this use of an unauthorized document. A representative from the U of A responded that the document, a training manual, was a component of their training program but was believed to have been solely an internal document. Following an inspection by CNSC staff, the U of A representative noted that the training program was approved but CNSC staff determined that the training manual should also be submitted as an Addendum to the training program. The U of A representative added that the document has yet to be submitted to the CNSC but that there are no safety concerns with regards to the current training program in place. CNSC staff concurred with the U of A.

23. The Commission enquired about the impact that the recent government cut-backs across the Province of Alberta may have had on the U of A. A representative from the U of A responded that the Province of Alberta has gone through a series of financial reassessments where budget cuts have affected provincial domains as well as universities but that there is no safety impact on the operations of the SLOWPOKE-2 reactor at the U of A.

24. CNSC staff will continue to monitor implementation and maintenance of the training program through its regulatory compliance activities.

3.2.2 Examination and Certification

25. The U of A reported that all of its operators for the SLOWPOKE-2 reactor facility are certified by the CNSC issued according to the NSCA and its regulations. Additionally, the U of A noted that CNSC reactor operator, reactor engineer, and reactor technician certifications are currently valid for 5 years.

26. The U of A 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. The U of A stated that Atomic Energy of Canada Limited (AECL) is the SLOWPOKE reactor manufacturer and supplier who also provides servicing and maintenance. The U of A added that only certified reactor engineers and technicians from AECL service the SLOWPOKE-2 reactor. CNSC staff concurred with the U of A.

27. 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.

28. 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.

3.2.3 Conclusion on Human Performance Management

29. Based on its consideration of the presented information, the Commission concludes that the U of A has appropriate programs in place and that current efforts related to human performance management provide a positive indication of the U of A’s ability

to adequately carry out the activities under the proposed licence.

3.3 Operating Performance

30. Operating performance includes operating policies, reporting and trending, and application of operating experience (root cause analysis and corrective actions) that enable the licensee's effective performance, as well as improvement plans and significant future activities.

31. Based on the information obtained though CNSC compliance inspections, the U of A's annual compliance reports and event reports, CNSC staff is of the opinion that the U of A has operated the facility safely and is performing satisfactorily with respect to this SCA.

32. The U of A stated that the SLOWPOKE-2 nuclear reactor was designed for use in hospitals or universities as a neutron source for the production of radionuclides. The U of A reported that a completed radionuclide request form is required for any request for radionuclide production. The U of A added that a second form is available at the SLOWPOKE-2 facility for repeat requests that may be validated for up to three months.

33. CNSC staff reported that the U of A plans to explore the replacement of specific facility ancillary equipment between now and 2015. CNSC staff noted that within the period of 2013-2023, the U of A plans to re-develop the Dentistry-Pharmacy Building that houses the SLOWPOKE-2 Reactor. CNSC staff further stated that though plans are in the early stages, the U of A has contacted CNSC staff informing them of the re-development project and that detailed discussions are planned for the summer of 2013.

3.3.1 Conduct of Operations

34. The U of A provided a list of references pertaining to all operating procedures. CNSC staff confirmed the adequacy of the facility's programs related to operation and maintenance of the facility as assessed through routine compliance inspections and desktop reviews.

35. CNSC staff reported that focused inspections were carried out following the licence renewal in 2003 and annual compliance reports were reviewed where no issues with safe operations were identified.

36. 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

37. CNSC staff reported that the U of A had one reportable event during the current licence period in June 2006 where an operator was forced to manually intervene a reactor alarm that was triggered in response to a neutron flux increase caused by a faulty neutron flux selection switch that did not engage properly. CNSC staff noted that the event is covered by the Safety Report and that the reactor design has safe self-limiting power excursion behaviour, not dependent on operator intervention. CNSC staff noted that the U of A confirmed that there was no damage to the reactor and that there was no hazard posed to personnel, the public or the environment.

38. CNSC staff reported that corrective actions, including additional preventative maintenance measures, were put in place to avoid a recurrence of the event and recommended the same to all SLOWPOKE facilities across Canada. CNSC staff confirmed that the completion of these measures at the U of A have been verified by CNSC staff during a compliance inspection.

3.3.3 Conclusion on Operating Performance

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

3.4 Safety Analysis

40. 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.

41. 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.

42. The U of A 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. CNSC staff agreed with the U of A.

43. The U of A noted that, since the commissioning of the SLOWPOKE-2 reactor, a single modification resulted in a licensed increase in the allowable excess reactivity from 3.4 milli k to 4.0 milli k in May 1998. Following safety analysis testing, the U of A determined that the increase in excess reactivity did not change the stability, nor compromise the safety characteristics, of the reactor.

44. The U of A reported that the *U of A SLOWPOKE-2 Facility Site Description and Operating Manual* provides measures to respond to postulated scenarios and abnormal situations that could lead to emergency situations. The U of A noted that such scenarios considered included tornadoes and extreme weather conditions, earthquakes, fire and associated emergencies in nearby buildings on campus.

45. CNSC staff reviewed and accepted the U of A's generic safety analysis, *U of A SLOWPOKE-2 Facility Site Description and Operating Manual.*

46. Based on the information obtained through CNSC compliance inspections, the U of A's annual compliance reports and event reports, CNSC staff is of the opinion that the U of A has operated the facility safely and is performing satisfactorily with respect to this SCA.

3.4.1 Fukushima Follow-up Actions

47. The U of A reported that, following the Fulushima accident in Japan on March 11, 2011, the CNSC requested that the U of A 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. The U of A stated that they responded to this request. CNSC staff confirmed that the U of A's conclusions that adequate measures are in place for the prevention and mitigation of accidents that might impact safety of the facility is acceptable. CNSC staff stated that no actions on this matter are outstanding.

3.4.2 Conclusion on Safety Analysis

48. 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

49. 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. The specific area that comprises physical design at the SLOWPOKE-2 reactor facility is the engineering change control.

50. The U of A reported that information on the Class I nuclear facility site, facility, building, rooms, systems and equipment is given in the *University of Alberta SLOWPOKE Facility Site Description and Operating Manual* revised in October 2012, and has not changed in any substantive manner since the previous reactor operating licence application. CNSC staff confirmed that the design of the facility has not significantly changed over the last three decades.

51. CNSC staff reported that no physical changes to the physical design or the safety case for the facility occurred during the licence period. CNSC staff noted that there were minor changes to improve the operation and maintenance of the facility. CNSC staff added that these changes have been reported to the CNSC through the U of A's annual compliance reports.

52. CNSC staff reported that changes to the facility are controlled as per the facility change control process documented in the quality assurance manual.

53. 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 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 encourages the SLOWPOKE licensees to use the application guides that follow the safety and control area framework to facilitate systematic evaluation by CNSC staff.

54. CNSC staff is of the opinion that the U of A is performing satisfactorily with respect to this SCA based on the information obtained through compliance inspections, annual compliance reports and event reports.

55. 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

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

57. CNSC staff is of the opinion that, in taking proper consideration of materials and component aging, the U of A is adequately maintaining the facility and is performing satisfactorily in this SCA.

3.6.1 Maintenance

58. The U of A reported that the *U of A SLOWPOKE Facility Site Description and Operating Manual* describes the operating procedures, maintenance and required records to be maintained in the operation of the facility, with reference to specific manufacturer procedures therein, and in the current licence, which stipulate the operating parameters from the reactor and auxiliary equipment.

59. The U of A reported that the Quality Assurance Manual for the University of Alberta SLOWPOKE Reactor Facility describes the quality assurance program of the facility. The U of A added that the program ensures that the activities related to the reactor operations meet the quality required for the health and safety of persons, the protection of the environment and the maintenance of national security and measures required to implement international obligations to which Canada has agreed. The U of A noted that the QA program relates especially to the operation and maintenance of the reactor and auxiliary equipment.

60. The U of A stated that various calibration and equipment testing activities are carried out at the SLOWPOKE-2 reactor facility to meet requirements for routine maintenance and surveillance as documented in the U of A internal document CPSR-362, *SLOWPOKE-2 Nuclear Reactor Operation and Routine Maintenance.* These activities include consistent calibration of survey meters, frequent leak testing, operability checks, pool and reactor water monitoring and purification, and replacement of the deionizer columns. CNSC staff agreed with the U of A.

61. The U of A reported that nuclear maintenance is performed by AECL. CNSC staff concurred with the U of A.

62. The Commission sought information regarding potential impacts on the operations of SLOWPOKE reactors if AECL discontinues their maintenance services. CNSC staff noted that they are monitoring the situation. CNSC staff also noted being satisfied with AECL's letter of commitment to service the SLOWPOKE reactor until 2019.

63. 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.

64. 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 a 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

65. The U of A reported that preventative maintenance and inspection of the SLOWPOKE-2 reactor is performed and recorded on a weekly basis where the findings are maintained on record. The U of A added that the facility Director developed check lists for the weekly maintenance and inspection as a reminder to staff and as a thorough record of maintenance. The U of A noted that examples of tests included in the annual and semi-annual check list are: testing the operation of the sump pump and its high water alarm, smoke detectors, pull stations, facility security systems and other equipment components. CNSC staff stated that the scope and frequency of carried out maintenance and surveillance activities are adequate.

66. 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.

67. Based on CNSC routine compliance inspections and reviews of the U of A's annual compliance reports, CNSC staff confirmed that the SLOWPOKE-2 facility is fit for service.

3.6.3 Aging Management

68. The U of A reported that the SLOWPOKE licensees have collectively acquired a limited supply of spare parts for the reactor console and ancillary reactor equipment with the issue of equipment aging.

69. CNSC staff reported that, following a request by the Commission from the 2003 licence renewal, the U of A submitted to CNSC staff information on the condition of

reactor structures, systems and components for the facility, with consideration of aging and degradation mechanisms. CNSC staff reviewed the plans for continued operation and found them acceptable.

70. In response to CNSC staff's request for improved trending maintenance of operational experiences, the U of A developed and maintained checklists, *Checklists for Annual and Semi Annual Maintenance Tests for the SLOWPOKE-2 Nuclear Reactor*.

71. 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 meets on occasion.

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 U of A's future plans with respect to transitioning from HEU to LEU. A representative from the U of A responded that the U of A was contacted by the Assistant Director of U.S. Department of Energy (DOE) on their global threat reduction initiative. The U of A representative noted that the University was willing to participate if external funds are available. A second representative from the U of A responded that there was a meeting with the U of A representative and the U.S. DOE in May 2013. CNSC staff responded that the CNSC is assisting in the coordination of the involved parties within the federal government and the U of A. The U of A representative noted that Natural Resources Canada confirmed that they cannot provide funding for the transition and the decision to move forward has not yet been made.

3.6.4 Conclusion on Fitness for Service

74. The Commission is satisfied with the U of A'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 U of A's 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 reactor 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 radioactive contamination are monitored, controlled, and kept as low as reasonably achievable (ALARA), with social and economic factors taken into consideration.

77. The U of A reported that a comprehensive radiation safety training program, *University of Alberta Code of Practice for Use of Handling of Radioactive Substances* (Code of Practice), was established at the U of A. This Code of Practice includes an on-line radiation safety course consisting of 17 training modules and a practical laboratory session involving basic theory and principles of radiation safety. The U of A added that a radiation training certificate is issued to persons who have completed the training program successfully, and workers are required to repeat and obtain certification every two years. CNSC staff concurred with the U of A and noted that the Code of Practice applies to the entire university.

78. The U of A reported that a licensed dosimetry service is used to monitor, assess, record and report doses of ionizing radiation received by operators. The U of A added that operators at the SLOWPOKE-2 facility are issued thermo luminescent dosimeters (TLDs) to measure whole-body and skin doses. The U of A noted that the occupational radiation exposures for employees at the U of A SLOWPOKE-2 facility have never exceeded the allowable limits for members of the public.

79. CNSC staff evaluated the U of A's radiation protection program for effective implementation through compliance verification activities and identified the need for administrative improvement with respect to dose record management and radiation instrument calibration. CNSC staff noted that the U of A implemented appropriate corrective actions. CNSC staff added that they will continue to monitor the U of A's implemented corrective action plans.

80. CNSC staff is of the opinion that the U of A has developed a radiation protection program and practices that meet the CNSC expectations for this SCA, and that implementation, with the exception of specified areas of improvement, is satisfactory. CNSC staff added that there are no outstanding actions regarding the U of A's radiation protection program.

81. The U of A reported that both its SLOWPOKE-2 facility and Radiation Safety Division have measures in place to monitor and control radiological hazards to ensure that non-fixed surface contamination and work area dose rates do not exceed institutional levels as described in the U of A SLOWPOKE-2 facility's *Site Description and Operating Manual*. CNSC staff concurred with the U of A.

82. The U of A reported that control of public exposure to radiation is ensured by limiting access to the SLOWPOKE-2 facility and controlling any releases of radioactive wastes.

83. The U of A reported that all visitors to the reactor are issued a direct reading dosimeter which is read and recorded at the beginning and the end of their visit. CNSC staff noted that no members of the public have exceeded the regulatory limits.

84. 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, the U of A will provide adequate protection to the health and safety of persons, the environment and national security.

3.8 Conventional Health and Safety

85. 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*[4] and conventional safety training.

86. Conventional health and safety covers the implementation of a program to manage workplace safety hazards.

87. The U of A reported that a health and safety management system consisting of the U of A Health and Safety Policy and the Specified Health and Safety procedures was implemented to ensure the protection of workers from hazards as they may arise in the course of their work at the facility. The U of A noted that these policies and procedures can be found online.

88. CNSC staff reported that the U of A has an occupational health and safety committee that is charged with reviewing incidents, conducting safety inspections, evaluating safety programs and recommending health and safety improvements.

89. The U of A reported that there have been no lost time injuries during the current licence period. CNSC staff concurred with the U of A.

90. Based on the information obtained through CNSC compliance inspections, the U of A's annual compliance reports and event reports, CNSC staff is of the opinion that the U of A's performance with respect to this SCA is satisfactory.

91. 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

[4] R.S.C., 1985, c. L-2

during the continued operation of the facility.

3.9 Environmental Protection

92. Environmental Protection covers the U of A'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.

93. The U of A reported that only the gaseous releases of xenon (Xe) fission products, and Argon-41 (Ar^{41}) produced by activation of air in the reactor irradiation sites, are of concern in regards to radioactive releases from the facility to the environment.

3.9.1 Environmental Management System

94. The U of A reported that its environmental protection policies and procedures are enforced by the Office of Environment, Health and Safety officers and that the director of the SLOWPOKE-2 facility is the designated person for the Chemical Spills and Workplace Hazardous Materials Information System (WHMIS).

3.9.2 Effluent and Emissions Control

95. The U of A stated that there is a dedicated exhaust fan on the roof of the Dentistry-Pharmacy building to release radioactive gases produced during operations. The U of A further stated that gaseous fission products are produced in the reactor fuel and a small amount migrate to the reactor container headspace, and are released to the environment during the weekly purge. The U of A noted that the weekly purge is done to avoid hydrogen-2 (H_2) build-up and to prevent H_2 from reaching explosive thresholds. The U of A added that there are no hazards to the reactor or persons as there are no sources of ignition in the reactor gas container space. The U of A reported that the activity of airborne radioactive gases in the reactor headspace is sampled annually. CNSC staff concurred with the U of A.

96. The U of A reported that CNSC staff performed an independent assessment of exposure to the general public as a result of the gaseous releases from the U of A SLOWPOKE-2 reactor and determined that a very conservative evaluation of the dose to the public is estimated to be less than 0.01% of the regulatory limit. CNSC staff confirmed this information.

97. The U of A stated that the reactor sump, fitted with a sump pump, is a possible release point for radioactive liquids. The U of A added that regeneration of its SLOWPOKE-2 reactor pool water deionizer unit utilizes hydrochloric acid and sodium hydroxide whereby the effluent from the regeneration of the ion exchange columns travels to the reactor sump and is then pumped to the sewer system via the sump pump. The U of A

noted that regeneration of the pool water deionizer is completed prior to operating the sump pump to avoid the release of a dilute, but strongly acidic or basic aqueous solution into the sewer system.

98. The U of A reported that there are no liquid radioactive releases from the SLOWPOKE-2 reactor during normal operation. The U of A noted that the radioactive water from routine maintenance and testing, particularly the reactor container activity weekly samplings, is stored and re-used as make-up for the reactor container. CNSC staff concurred with the U of A.

99. CNSC staff is of the opinion that the U of A's performance with respect to this SCA is satisfactory, and that the U of A has in place environmental protection measures and practices that comply with CNSC requirements.

3.9.3 Conclusion on Environmental Protection

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

3.10 Emergency Management and Fire Protection

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

102. The U of A reported that the U of A's Office of Emergency Management Services provides guidance to the University and has the overall responsibility for the University's Integrated Emergency Master Plan. The U of A added that the emergency response organization also partners with government agencies and post-secondary institutions on emergency management, namely: reduction, readiness, response and recovery.

103. Based on compliance verification activities, CNSC staff is of the opinion that the U of A is performing satisfactorily with respect to this SCA.

3.10.1 Nuclear Emergency Preparedness and Response

104. The U of A reported that its emergency response organization is designed to manage all emergency response activities and include the following three elements namely: First responders, Crisis Management Team (CMT) and CMT Emergency Policy Group.

105. The U of A stated that the structure and function of the university's emergency response organization is based on the Incident Command System and that, when activated, it will provide support to the scene, maintain surveillance of the portions of the university not affected by the emergency, and provide policy decisions as required. CNSC staff agreed with the U of A.

3.10.2 Fire Emergency Preparedness and Response

106. The U of A developed and submitted to the CNSC, in January 2012, the *University of Alberta SLOWPOKE Facility Fire Protection Program* (FPP). Following review, CNSC staff found the U of A's FPP to be acceptable.

107. The U of A reported that the FPP was developed to minimize both the probability of occurrence and the consequences of fire at the facility. CNSC staff noted that the FPP was established to comply with the requirements of CNSC's *General Nuclear Safety and Control Regulations*, the *National Fire Code of Canada*, and the *National Building Code of Canada*.

108. CNSC staff is of the view that the U of A is in compliance with regulatory requirements and its FPP.

3.10.3 Conclusion on Emergency Management and Fire Protection

109. 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

110. Waste management covers the licensee's site-wide waste management program. CNSC staff evaluated the U of A's performance with regards to waste minimization, segregation, characterization and storage.

111. The U of A reported that the operation of the SLOWPOKE-2 reactor facility generates both routine laboratory waste and materials contaminated with radioactivity. The U of A added that the Risk Management Services, Department of Environment, Health and Safety, and specifically the Environmental Services Division, is responsible for the management of hazardous waste at the university, and the SLOWPOKE-2 facility. Furthermore, the U of A noted that the hazardous waste is transported from the main campus to the University's Hazardous Waste Facility at Cloverbar, Edmonton where it is sorted, stored and shipped to a licensed waste facility or recycled.

112. The U of A stated that disposal of hazardous wastes resulting from the daily operation of the U of A's SLOWPOKE-2 facility are reported annually to the CNSC in the U of A's SLOWPOKE-2 facility's annual compliance report. CNSC staff concurred with the U of A.

113. The U of A noted that procedures and processes for the removal and disposal of the reactor components made radioactive by operation are fully described in the University of Alberta Preliminary Decommissioning Plan. CNSC staff confirmed that the decommissioning plan was reviewed and accepted by CNSC staff. CNSC staff noted that there is no spent fuel generated from the SLOWPOKE-2 reactor.

114. The Commission enquired about radioactive waste management and the amount of waste that is considered radioactive for disposal. A representative from the U of A responded that the typical amount of waste that is disposed as radioactive waste is less than 10 kg in a 2-year period but that this waste is generally no longer radioactive after being left in storage to decay. The U of A representative further responded that radioactive waste such as irradiated rock samples is stored in amounts of 100 to 200 grams per year and disposed after several years when radiation levels very close to background are reached.

115. CNSC staff is of the opinion that the U of A has acceptable Waste Management Practices and that their performance with respect to the Waste Management SCA is satisfactory.

116. Based on the above information and considerations, the Commission is satisfied that the U of A is safely managing waste at its SLOWPOKE-2 reactor facility.

3.12 Security

117. The *General Nuclear Safety and Control Regulations* (GNSCR) 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 SLOWPOKE-2 facility and of associated nuclear substances are as documented in the *Nuclear Security Regulations*.

118. The U of A reported that, since the mid-term status report was presented to the Commission in October 2008, three additional physical security inspections were conducted, and no action items resulted.

119. CNSC staff is of the opinion that the U of A SLOWPOKE-2 Facility has an acceptable security program in place that meets regulatory requirements and makes adequate provisions for the maintenance of national security.

120. The Commission is satisfied that the U of A's performance with respect to maintaining security at the facility has been acceptable.

121. The Commission concludes that the U of A has made adequate provisions for ensuring the physical security of the facility, and is of the opinion that the U of A will continue to make adequate provisions during the proposed licence period.

3.13 Safeguards

122. 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.

123. The U of A reported that access to the SLOWPOKE-2 facility, specifically the reactor room vault, is under strict control whereby only CNSC-certified personnel have access, and that the facility has security equipment in place to monitor any potential unauthorized attempt to access the facility.

124. The U of A noted that the security measures in place at the SLOWPOKE-2 facility include controlled access to the facility, and prevention from loss, illegal use, theft or removal of nuclear materials from the facility. The U of A reported that a safeguards program was maintained to comply with CNSC regulatory document RD-336, *Accounting and Reporting of Nuclear Material*, formerly known as AECB-1049, *Reporting Requirements for Fissionable and Fertile Substances*. CNSC staff concurred with the U of A.

125. The U of A reported that three Physical Inventory Verification inspections were carried out during the current licensing period. During this time, the U of A stated that monthly General Ledger Reports, annual fissile and fertile material Physical Inventory Taking, and Operational Programs were submitted to the CNSC and the IAEA. CNSC staff confirmed this information and noted that, for IAEA inspections and CNSC evaluations, The U of A complied with all regulatory requirements. CNSC staff also noted that there were no reportable events or action notices issued as a result of these inspections.

126. CNSC staff is of the opinion that the U of A SLOWPOKE-2 Facility has an effective and acceptable safeguards program that conforms to measures required by the CNSC to meet Canada's international safeguards obligations as well as other measures arising from the *Treaty on the Non-Proliferation of Nuclear Weapons*. CNSC staff stated that the U of A is performing satisfactorily with respect to this SCA.

127. Based on the above information, the Commission is satisfied that the U of A 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

128. Packaging and transport covers the safe packaging and transport of nuclear substances to and from the U of A's SLOWPOKE-2 facility. The SLOWPOKE-2 facility must adhere to the *Packaging and Transport of Nuclear Substances Regulations*[5] and Transport Canada's *Transportation of Dangerous Goods Regulations*[6] for all shipments leaving the site. The *Packaging and Transport of Nuclear Substances Regulations* apply 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.

129. The U of A reported that the SLOWPOKE-2 facility's Director, full-time reactor licensed operators and personnel involved in the packaging, offering for transport, transportation or receipt of radioactive substances must be Class 7 Transportation of Dangerous Goods (TDG) certified by the University of Alberta Radiation Protection Manager. CNSC staff confirmed that all U of A staff who handle nuclear substances for the purpose of packaging and transport have received relevant training as required by the *Transportation of Dangerous Goods Regulations*.

130. CNSC staff reported that there were no reported packaging and transport related incidents during the current licensing period and that routine compliance verification activities identified no issues of non-compliance.

131. CNSC staff stated that the U of A has demonstrated compliance with the *Packaging and Transport of Nuclear Substances Regulations* and the *Transportation of Dangerous Goods Regulations.*

132. Based on the information obtained through CNSC compliance inspections, the U of A's annual compliance reports and event reports, CNSC staff is of the opinion that the U of A has operated the facility safely and is performing satisfactorily with respect to this SCA.

133. Base on the above information, the Commission is satisfied that the U of A is meeting regulatory requirements regarding packaging and transport.

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[5] SOR/2000-208
[6] SOR/2001-286

3.15 Application of the *Canadian Environmental Assessment Act*

134. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act, 2012*[7] (CEAA 2012) have been fulfilled.

135. CNSC staff reported that it had completed an Environmental Assessment (EA) determination under the CEAA 2012. CNSC staff stated that the licence renewal request is not classified as a "designated project" pursuant to the *Regulations Designating Physical Activities* made under paragraph 84(*a*) of the CEAA 2012. Therefore, the CNSC is not considered a responsible authority pursuant to paragraph 15(*a*) of the CEAA 2012 and no federal EA is required.

136. In accordance with the CEAA and its regulations, CNSC staff have determined that no Environmental Assessment under the CEAA is required in order for this licensing action to occur.

137. 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.

3.16 Aboriginal Engagement

138. 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.

139. CNSC staff reported that, based on the review of the licence application, CNSC staff conducted research that lead to a preliminary list of First Nation and Métis groups and organizations including Enoch Cree First Nation, Alexander First Nation, The Confederacy of Treaty Six First Nations, and Métis Nation of Alberta.

140. CNSC staff stated that notification letters, including information on the licence application and the public hearing process, were sent to the identified groups, and these groups were encouraged to participate should they have interest in the matter. CNSC staff confirmed that follow-up calls were made to ensure that the information was received and to answer questions if necessary.

141. Based on the information reviewed to date, CNSC staff is of the opinion that activities related to the non-power reactor operating licence are not expected to cause any adverse impact to any potential or established Aboriginal or treaty rights. CNSC staff noted that identified First Nation and Métis groups and organizations were notified and

[7] S.C. 2012, c. 19, s.52

encouraged to participate in the review process and to advise the Commission directly of any concerns they may have in relation to this licensing decision.

142. Based on the information provided, the Commission acknowledges the efforts made in relation to the CNSC's obligations regarding Aboriginal consultation and the Legal Duty to Consult.

3.17 Public Information Program

143. A public information program is a regulatory requirement for licence applicants and licensed operators of Class I nuclear facilities, such as the SLOWPOKE-2 reactor facility. Paragraph 3(j) of the *Class I Nuclear Facilities Regulations*[8] 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 environment and the health and safety of persons that may result from the activity to be licensed*."

144. The U of A reported that information including the reactor's location, contact information, and the activities that are carried out, is provided on the university website. Furthermore, over the history of the facility, the U of A added that information was made publicly available through university newsletters, staff papers and television and radio segments that were aired. The U of A noted that the SLOWPOKE-2 facility has always maintained an open policy in regards to answering any questions from either the university community or the general public regarding the security and safety of the SLOWPOKE-2 reactor. CNSC staff agreed with the U of A.

145. CNSC staff noted that the U of A is currently updating its public information program to meet the applicable sections of RD/GD-99.3, *Public Information and Disclosure*, CNSC Regulatory Document.

146. 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.

147. The Commission expressed the view that the public information program seems incomplete, and asked for opinions on this topic. The U of A representative provided details on the public information activities, including tours of the facility and publications in local newspapers. The U of A representative added that they are willing to work with CNSC staff in order to meet the requirements stated in RD/GD 99.3. CNSC staff noted that they are in the process of communicating their expectations to the licensees in this regard, and will gradually put in place the requirements stated in RD/GD 99.3, taking into account the facility's level of risk. CNSC staff commented

[8] SOR/2000-204

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.

148. The University of Alberta representative commented that communicating information about a nuclear reactor in the centre of a city can be sensitive and requires careful consideration. The University of Alberta representative added that universities might not be able to comply with all of the requirements around a communication policy that comes out of the CNSC, given a risk/benefit ratio that a university needs to consider in having those types of communication policies. CNSC staff noted being willing to discuss with the licensees on this topic, taking onto 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.

149. CNSC staff is of the opinion that the U of A's public information program is transitioning to meet the applicable requirements of RD/GD-99.3. CNSC staff will continue to monitor the U of A's process and compliance with the applicable requirements of RD/GD-99.3.

150. Based on this information, the Commission is satisfied that the U of A'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

151. 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.

152. CNSC staff reported that the U of A revises their decommissioning plan every five years. CNSC staff confirmed that the U of A's current decommissioning plan meets the requirements of CSA standard *Decommissioning of Facilities Containing Nuclear Substances*, N294-09.

153. The U of A reported that the CNSC reviewed and accepted the SLOWPOKE-2 facility's decommissioning plans on July 4, 2011, and agreed with the proposed financial guarantee. CNSC staff confirmed the U of A's statement and noted that the revised decommissioning plan resulted in an increase in the financial guarantee, which

is in place in the form of a strip bond held in an escrow account, to $5.75M.

154. CNSC staff is of the opinion that the U of A has been maintaining the required financial guarantee for decommissioning and is in compliance with the current licence condition pertaining to the financial guarantee. CNSC staff is satisfied that the U of A's financial guarantee is consistent with the criteria set out in the CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities.*

155. The Commission sought information regarding the decommissioning of the SLOWPOKE-2 reactor facility. The U of A representative explained that there is an escrow account that is growing interest continuously and there is an ongoing contribution account that was started by the U of A in 2011. The U of A representative noted that the decommissioning costs are currently planned at $10 million for 2040.

156. 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

157. The Commission requires that the licensee has Nuclear Liability Insurance under the *Nuclear Liability Act*.

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

159. The U of A reported that, as the owner and operator of the University of Alberta SLOWPOKE Nuclear Reactor, they carry a requisite $500,000 commercial coverage insurance policy pursuant to the Nuclear Liability Act. The U of A added that premiums are paid annually to the Nuclear Insurance Association of Canada by the University through the Insurance and Risk Management unit of Risk Management Services. CNSC staff confirmed that the U of A has the required insurance in place.

160. The U of A reported that they are a post-secondary, not-for-profit, educational institution governed by the Post-Secondary Learning Act of the Province of Alberta whereby the U of A is exempt from cost recovery fees. CNSC staff concurred with the U of A.

3.20 Licence Length and Conditions

161. The U of A 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 the U of A is qualified to carry on the licensed activities authorized by the

licence.

162. 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.

163. The Commission sought comments on the references in the LCH to documents from the past and asked if updating was required. CNSC staff responded that SLOWPOKE facilities do not tend to change significantly over time. CNSC staff noted that it is common that SLOWPOKE licensees have complimentary documents to reflect updates to the SLOWPOKE facilities' maintenance and operations as required.

164. 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.

165. 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

166. 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.

167. 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.

168. 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.

169. Therefore, the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, renews the University of Alberta's Non-Power Reactor Operating Licence NPROL-18.00/2013 for its SLOWPOKE-2 facility located in Edmonton, Alberta. The licence NPROL-18.00/2023 will be valid from July 1, 2013 to June 30, 2023.

170. The Commission includes in the licence the conditions as recommended by CNSC staff and set out in the draft licence attached to CMD 13-H8.

171. 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.

172. With this decision, the Commission directs CNSC staff to provide annual reports on the performance of the U of A's SLOWPOKE-2 reactor. CNSC staff shall present these reports at public proceedings of the Commission.

M. Binder JUN 2 6 2013

Michael Binder Date
President,
Canadian Nuclear Safety Commission