

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant Canadian Light Source Incorporated

Subject Application for an Amendment of the Particle
Accelerator Operating Licence

Date December 11, 2001

RECORD OF PROCEEDINGS

Applicant: Canadian Light Source Incorporated

Address/Location: University of Saskatchewan, 107 North Road, Saskatoon,
Saskatchewan S7N 5C6

Purpose: Application for an Amendment of the Particle Accelerator Operating Licence

Application received: August 17, 2001

One Day Hearing: November 15, 2001

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

Members present: L.J. Keen, Chair Y.M. Giroux
C.R. Barnes L.J. MacLachlan
A.R. Graham

Counsel: S.K. Fraser

Secretary: M.A. Leblanc

Recording Secretary: C.N. Taylor

Applicant Represented By	Document Number
<ul style="list-style-type: none">• M. Benmerrouche, Manager of Health, Safety and Environment• M. de Jong, Acting Executive Director• T. Whitworth, Vice President, Finance and Resources, University of Saskatchewan• L. Dallin, Commissioning Leader and Operations Manager	01-H29.1
CNSC Staff	Document Number
<ul style="list-style-type: none">• K. Pereira• A. Aly• M. James	CMD 01-H29 CMD 01-H29.A
Intervenors	Document Number
<ul style="list-style-type: none">• None	

Decision and Reasons:

Licence/Amendment: Issued: X Not Issued:
Date of Decision: November 15, 2001

1. Introduction

Canadian Light Source Incorporated (CLS) has applied for an amendment to their site licence to authorize the second phase of commissioning of its particle accelerator facility. The facility, located at the University of Saskatchewan in Saskatoon, Saskatchewan, consists of a 2.9 GeV electron synchrotron that will be used for experiments in a variety of fields such as biology, materials research, atomic and molecular science, earth sciences, pharmaceuticals and electronics.

On May 28, 2001, the Commission issued an operating licence for the facility that was limited to the first phase of commissioning. The second commissioning phase is the subject of the current application.

Phase II commissioning consists of completing the commissioning of the linac (linear accelerator) to the booster transfer line, commissioning of the booster ring, and commissioning of the booster to storage ring transfer line up to beam dump BST1400-01.

A third and final commissioning phase will require the approval of the Commission before an authorization for full operation is sought from the Commission. The Commission is requiring that all applications for the commissioning and operation of the CLS facility come before the Commission at public hearings. The Commission has agreed to hear these application at one-, rather than two-day hearings; however, the Commission reserves the right to add additional hearing days as it deems necessary.

2. Decision

The Canadian Nuclear Safety Commission (CNSC), in making its decision, considered the information presented at the public hearing held November 15, 2001 in Ottawa, Ontario.

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

The Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the Class 1B Particle Accelerator Operating Licence (Licence No. PAIOL-02.00/2006) to Canadian Light Source Incorporated to allow the second phase of commissioning of its particle accelerator facility. The amended licence, PAIOL-02.01/2006, is valid from December 11, 2001 to May 27, 2006, unless suspended, amended, revoked or replaced.

The Commission amends licence PAIOL-02.00/2006 as follows:

- the list of documents in Appendix A that describe the facility is updated to reflect the current status of the facility;
- the list of documents in Appendix B that pertain to the overall operation is updated to reflect the operations associated with the second phase of commissioning;
- condition C1 of the current licence is replaced by the following:

The licensee shall commission the facility in accordance with the CLS Commissioning Phases, listed in document B1 of Appendix "B". The commissioning shall be done as described in document B2 , B3 and B5 of Appendix "B". In the event of any conflict or inconsistency between these documents, the licensee shall comply with the requirements of documents B2 and B3 of Appendix "B"; and

- condition C2 of the current licence replaced by the following:

The licensee shall not perform any of the following activities without the prior written approval of the Commission, or a person authorized by the Commission:

- a) Bring Beam beyond point BST0108-01 in the beamline (located in Drawing LTB1/ME/0034408 found in document B3 of Appendix "B");
- b) Start the third phase of commissioning (Phase III of the Commissioning Phases listed in Appendix B, document B1); and
- c) Turn-over from commissioning to routine operation.

3. The Public Hearing Process

The public hearing, conducted under the *Nuclear Safety and Control Act* and the *Canadian Nuclear Safety Commission Rules of Procedure*, was on November 15, 2001, in Ottawa. A notice of the public hearing was issued on September 6, 2001. No interventions were received.

4. Issues and Commission Findings

4.1 Protection of Workers

The Commission considered information presented during the hearing on the measures designed to protect workers from radiation. Those measures include shielding, personnel exclusion interlocks, radiation monitoring in work areas, personal dosimetry, and worker training on radiation hazards. The Commission, in previous decisions for the facility, accepted the shielding designs and radiation protection program; these remain unchanged and acceptable to the Commission.

The Commission noted that the procedure for the lock-up for personnel exclusion zones was not yet complete at the time of the initial document filing for the hearing, and that Phase II commissioning cannot proceed without those procedures being approved. In its supplementary information for the hearing, CNSC staff confirmed that the procedure had been completed and was found to be acceptable by CNSC staff.

To further ensure the protection of workers, CNSC staff recommended to the Commission that a condition (C2 (a)) be added to the licence which would prevent beam injection to the Booster until the Interlock System is tested and accepted by CNSC staff. In supplementary information to the hearing, CNSC staff recommended that the licence condition describe precisely the point beyond which the beam may not go without the prior written authorization of the Commission, or person authorized by the Commission. That point is defined as BST0108-01 in the beamline. The Commission concurs with the need for this licence condition. The Commission also delegates the exercise of the authority under the amended licence condition C2 (a) to the Director General, Fuel Cycle and Materials Regulation Directorate.

During the hearing, the Commission questioned CLS on the two locations where higher than acceptable radiation levels were observed during the Phase I commissioning tests. CLS explained that the tests were designed to simulate extreme, worst-case conditions, and that radiation levels in those locations are expected to be acceptable during normal operations. Nevertheless, in response to the test results, CLS explained that radiation monitors, with automatic facility shutdown levels, have been installed at those locations, thus ensuring no significant exposures will occur at those locations.

With respect to conventional (non-radiological) health and safety, the Commission received information on CLS's recently formed Health, Safety and Environment Advisory Committee (HSEAC) that reports directly to the CLS Board of Directors. CNSC staff noted during the hearing that the terms of reference for this committee clearly set out the authority, responsibility and accountability for safety at the CLS facility. CLS explained to the Commission during the hearing that the HSEAC makes regular safety inspections, meets at least monthly (generally more frequently as required), and invites all staff to raise safety issues for resolution.

CNSC staff further noted that CLS has an effective human factors program which contributes positively to overall safety culture at the facility.

Based on the information presented during the hearing, the Commission is satisfied that adequate provisions have been, and will be made, to protect workers and the public during the proposed Phase II commissioning of the facility.

4.2 Protection of the Environment

The Commission noted that it had previously considered, and found acceptable, the measures incorporated into the design and proposed operation of the facility for the purpose of ensuring protection of the environment. The Commission also reflected on its earlier decision concerning the environmental assessment of the facility, conducted pursuant to the *Canadian Environmental Assessment Act*. At that time the Commission concluded that the project, taking into account the appropriate mitigation measures, is not likely to cause significant adverse environmental effects. The basis for that conclusion has not changed.

The Commission is therefore satisfied that appropriate measures have been, and will be, taken to protect the environment during the proposed phase II commissioning of the facility.

4.3 Security

The Commission considered the advice of CNSC staff concerning the adequacy of security at the CLS facility. In response to questions from the Commission during the hearing, CNSC staff further explained that additional security measures will likely be required as a result of a security review that CNSC staff have recently completed for all Class 1A and 1B Nuclear Facilities. Based on the above information, the Commission is satisfied that CLS meets all of the applicable regulatory requirements for security.

4.4 Quality Assurance

The Commission considered information on CLS's quality program. The Commission noted that a position of Quality Manager, reporting to the Executive Director, has been added to the management structure, and that provisions for quality assurance now form part of CLS's Internal Responsibility System. The Commission also noted that licence conditions relating to quality assurance will be retained and will not be affected by the proposed licence amendment. However, in response to questions during the hearing, the Commission noted that the position of Quality Manager at CLS remains vacant. The Commission is concerned that this position be filled as soon as possible.

The Commission is satisfied that CLS is taking appropriate steps to provide for quality assurance at the CLS facility. The Commission will further examine the status of that quality program and its implementation at the time the Commission considers applications for future facility development phases.

4.5 Emergency Preparedness and Response

During the hearing, the Commission verified that CNSC staff are satisfied with the interim fire protection and response measures in place during the remaining construction and commissioning of the facility. CNSC staff indicated, however, that a detailed review of the operational fire protection plan will be done at the time an application for full operation of the facility is received.

In response to questions from the Commission, CLS explained that it has been working directly with the local fire department staff, and that orientation and training sessions with the local fire departments will continue on a regular basis. The Commission noted that the fire hazards associated with the CLS facility are generally of a conventional, as opposed to radiological, nature.

Based on the information provided at the hearing, the Commission is satisfied that CLS is adequately prepared to respond to emergencies that could arise at the CLS facility in the proposed

Phase II commissioning.

4.6 Public Information

In response to the CNSC requirement to inform the public about the effects of the facility, the Commission received information about CLS's public information activities. The Commission noted that CLS has been conducting public tours of the facility on a monthly basis, and prearranged tours three times per week. Public information is posted on the CLS web site, and an outreach coordinator has been participating in public workshops and has been preparing and distributing educational and promotional material to the public.

CLS noted during the hearing that it engages in a number of news media activities, and participates in public lectures and community open houses. Those activities are aimed at informing a wide range of government, scientific and public audiences.

Based on the information provided at the hearing, the Commission is satisfied that CLS has an adequate public information program.

4.7 Decommissioning and Financial Guarantees

The Commission was informed during the hearing that CNSC staff had completed its review of a Preliminary Decommissioning Plan prepared by CLS and that the CNSC staff comments were being addressed by CLS at the time of the hearing.

CNSC staff informed the Commission that the need for a financial guarantee for decommissioning had not yet been determined; the amount of the decommissioning costs would first need to be determined.

In response to the Commission's questions during the hearing on the financial guarantee for decommissioning, a University of Saskatchewan representative indicated that the University plans to fund the decommissioning through a trust fund that would be grown with annual deposits over about twenty years. On further questioning from the Commission, the University's representative confirmed that the University of Saskatchewan would likely cover any remaining decommissioning liability in the event that the trust fund was inadequate at the time of decommissioning.

The Commission is satisfied that adequate steps are being taken to prepare an acceptable decommissioning plan and financial guarantee for the CLS facility. However, the Commission also notes that, in its *Record of Proceedings, Including Reasons for Decision* for the initial operating licence for the CLS facility (dated May 28, 2001), the Commission stated that it expected to receive a decommissioning plan, which includes reference to financial guarantees,

“prior to consideration of future licensing phases”. The Commission wishes to clarify that an application for the third and final commissioning phase must be accompanied by the decommissioning plan and financial guarantee, revised to address comments and expectations of the CNSC staff.

4.8 Responsibilities and Liabilities

The Commission notes that, during the hearing on the CLS operating licence (which concluded on May 2, 2001), the Commission raised a number of questions concerning the agreements in place between CLS and the University of Saskatchewan. The Commission was concerned about how those agreements define and affect the legal responsibilities and liabilities of the two parties in relation to the CNSC licence and *Nuclear Safety and Control Act* (NSCA) as the project evolves in the future. The Commission raised further questions about these issues in the present hearing. The Commission remains unclear about how the respective roles of the parties will evolve, and about whether the current agreements adequately define and address the legal responsibilities of the licensee under the NSCA.

Therefore, the Commission requests that CNSC staff and CLS provide, for the hearing on the next phase of commissioning (Phase III), a clear picture of the legal responsibilities, accountabilities and liabilities for the CLS facility under the CNSC licence and NSCA, including with respect to the liabilities for operations and decommissioning.

The Commission is of the opinion that this clarification is needed primarily for the future project phases. The Commission is satisfied that CLS Inc. is the legally responsible licensee for the purpose of the proposed Phase II commissioning activities and related licence amendment.

4.9 Canadian Environmental Assessment Act

The Commission concurs with the CNSC staff’s interpretation of the application of the *Canadian Environmental Assessment Act* (CEAA) to the proposed Phase II commissioning project. The Commission concludes that an additional environmental assessment under the CEAA is not required. The proposed activities are within the scope of an earlier environmental assessment of the CLS facility and therefore Section 3 (General) and Section 2 of Schedule 1, Part 1 of the *CEAA Exclusion List Regulations* apply.

5. Conclusion

The Commission has considered the information and submissions of CNSC staff and all other

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. The Commission accepts the information set out in CMD 01-H29 and CMD 01-H29.A prepared by CNSC staff and the submissions, statements of law, conclusions and recommendations set out in these documents.

The Commission is therefore of the opinion that the applicant satisfies the requirements of subsection 24(4) of the *Nuclear Safety and Control Act*.

The Commission therefore amends, pursuant to section 24 of the *Nuclear Safety and Control Act*, licence PA1OL-02.00/2006 to allow the second phase of commissioning of the CLS particle accelerator facility.

Furthermore, the Commission delegates the exercise of the authority under the revised licence condition C2 (a) to the Director General, Fuel Cycle and Materials Regulation Directorate.

Marc A. Leblanc
Secretary,
Canadian Nuclear Safety Commission

Date of decision: November 15, 2001

Date of release of Reasons for Decision: December 11, 2001