

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant TRIUMF Accelerators Inc.

Subject Application to Amend the Class IB Particle
Accelerator Operating Licence

Hearing
Date August 26, 2008

RECORD OF PROCEEDINGS

Applicant: TRIUMF Accelerators Inc.

Address/Location: 4004 Wesbrook Mall, Vancouver, BC, V6T 2A3

Purpose: Application to amend the Operating Licence for the TRIUMF Particle Accelerator Facility

Application received: March 6, 2008

Date of hearing: August 26, 2008

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

Members present: M. Binder, Chair

Secretary: M.A. Leblanc
Recording Secretary: S. Dimitrijevic

Licence: Amended
Date of Release of Decision: September 8, 2008

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Introduction

1. TRIUMF Accelerators Inc. (TAI) has applied to the Canadian Nuclear Safety Commission¹ (CNSC) for an amendment to its Class IB operating licence for the TRIUMF particle accelerator facility, located at Vancouver, British Columbia. The current operating licence is PA1OL-01.00/2012 (the Licence), which expires on March 31, 2012.
2. TAI has requested changes to modify Appendices A and B of the Licence in order to authorize a limited material irradiation test at its Isotope Separator and Accelerator (ISAC) facility. The approval of the requested changes would allow TAI to use uranium containing targets in irradiation tests and modification of the Operational Specifications and Limits accordingly.

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:
 - a) if TAI is qualified to carry on the activity that the amended licence would authorize; and
 - b) if, in carrying on that activity, TAI 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.

Hearing

4. Pursuant to section 22 of the NSCA, the President of the Commission established a panel of the Commission to hear this matter.
5. The Commission, in making its decision, considered information presented for a hearing held on August 26, 2008 in Ottawa, Ontario. The hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*³. During the hearing, the Commission considered written submissions from CNSC staff (CMD 08-H131) and TAI (CMD 08-H131.1).

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 S.C. 1997, c. 9.

³ S.O.R./2000-211.

Decision

6. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*, the Commission concludes that TAI has met the conditions of subsection 24(4) of the NSCA Therefore,

the Commission amends the Class IB operating licence PA1OL-01.00/2012 issued to TRIUMF Accelerators Inc. for its TRIUMF particle accelerator facility. The amended licence, PA1OL-01.01/2012, remains valid until March 31, 2012.

7. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 08-H131.

Issues and Commission Findings

Qualifications and Protection Measures


8. TAI presented to the Commission its intention to begin using actinide⁴ targets in the ISAC facility. Thin foil of uranium oxide was the material of choice for the targets to be used during the requested irradiation tests. The original design of the ISAC facility has been made for operation with all target materials. However, at the time of the initial licensing, in 1997, CNSC staff and TAI agreed that certain prerequisites, stemming from production of alpha-particles during irradiation of actinide targets, were needed for a safe operation. Consequently, the issued operating licence limited the operations at ISAC to targets made of materials with elements having atomic numbers lower than 83, restricting thus the use of uranium.
9. In support of its request, TAI submitted the *Actinide Target Safety Analysis Report*. The report includes a description of the additional radiation safety issues associated with actinide target operation at ISAC, as well as the mitigation measures implemented to mitigate identified hazards. The report has been reviewed by the Accelerator Division Safety Review Committee and then sent to the expert at the Commissariat Energie Atomique in Saclay, France, for an external review.
10. In the submitted safety report, TAI outlined the scope and staging of the proposed test, the radiological monitoring during the test and the summary of the test conduct. TAI stated that the proton beam current during the test would not exceed 2 microamperes (μA). The total proton current integrated over time would not exceed 300 microampere-hours (μAh), which represents about one percent of the activity generated in a typical ISAC target. The test would last ten days and its purpose would be to validate the safety analysis presented in the report.

⁴ Group of elements with atomic numbers between 89 and 103 that includes uranium.

11. TAI also stated that the obtained results and findings of the conducted test would be reported to the CNSC. This report would address areas where operational changes or limits may be required in order to allow ongoing operation of actinide targets at low beam currents.
12. CNSC staff, in its written submission, stated that the procedures proposed by TAI were adequate to ensure a safe conduct of the experiment. CNSC staff further stated the measures for protection of persons and the proposed operational radiation protection changes for this test meet regulatory requirements.
13. CNSC staff noted that the requested amendment to the Licence does not have any impact on the security program at TAI and does not affect safeguards requirements.

Application of the *Canadian Environmental Assessment Act*

14. Before making a licensing decision, the Commission must be satisfied that all applicable requirements of the *Canadian Environmental Assessment Act*⁵ (CEAA) have been fulfilled.
15. CNSC staff reported that it had completed an Environmental Assessment (EA) determination. The requested amendment to the Licence is a "trigger" listed in the *Law List of Regulations*⁶ under the CEAA, and the proposed changes are defined as a "project".
16. CNSC staff stated that the initial Environmental Assessment (EA) had been completed for the originally proposed activity of ISAC, encompassing the irradiation of all target materials, including uranium oxide. It had been concluded that the project, taking into consideration mitigation measures identified in the screening report, is not likely to cause significant adverse environmental effects. Based on the said, CNSC staff expressed the opinion that, as an EA has already been conducted earlier, no further CEAA assessment was required.
17. The Commission accepts the opinion of CNSC staff and is satisfied that all applicable requirements of the CEAA have been fulfilled.



Michael Binder,
President
Canadian Nuclear Safety Commission

Date of release of Decision: September 8, 2008

⁵ S.C. 1992, c. 37.

⁶ S.O.R./94-636