



Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant TRIUMF Accelerators Inc.

Subject Application for an amendment to TRIUMF
Accelerators Inc.'s Class 1B Particle Accelerator
Operating Licence located in Vancouver, British
Columbia

Hearing
Date July 16, 2010

RECORD OF PROCEEDINGS

Applicant: TRIUMF Accelerators Inc.

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

Purpose: Application for an amendment to TRIUMF Accelerators Inc.'s Class IB Particle Accelerator Operating Licence located in Vancouver, British Columbia

Application received: March 29, 2010

Date of hearing: July 16, 2010

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

Members present: M. Binder, Chair

Secretary: K. McGee

Recording Secretary: S. Gingras

Licence: Amended

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Introduction

1. TRIUMF Accelerators Inc. (TRIUMF) has applied to the Canadian Nuclear Safety Commission¹ (CNSC) for an amendment to the operating licence for its Class 1B particle accelerator located in Vancouver, British Columbia. The current licence, PA1OL-01.02/2012, expires on March 31, 2012.
2. TRIUMF has applied for a licence amendment to modify a portion of a radiation exclusion area on site for one of its Class II accelerators in order to permit worker occupancy. Under a major expansion project, TRIUMF is proceeding with developmental and preparatory work. Due to space limitation, TRIUMF intends to convert a portion of the existing radiation protection area into a workshop to build and eventually test an Injector Cryogenic Module.

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 TRIUMF is qualified to carry on the activity that the amended licence would authorize; and
 - b) if in carrying on that activity, TRIUMF 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. The Commission, in making its decision, considered information presented for a hearing held on July 16, 2010 in Ottawa, Ontario. During the hearing, the Commission considered a written submission from CNSC staff (CMD 10-H116) and written submissions from TRIUMF (CMD 10-H116.1).

Decision

5. 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 TRIUMF has met the conditions of subsection 24(4) of the NSCA. Therefore,

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.

the Commission, pursuant to section 24 of the *Nuclear Safety and Control Act*, amends the Class 1B Particle Accelerator Operating Licence PA1OL-01.02/2012 issued to TRIUMF Accelerators Inc. to modify a portion of a radiation exclusion area for one of its particle accelerators located in Vancouver, British Columbia. The amended licence, PA1OL-01.03/2012, remains valid until March 31, 2012.

6. The Commission includes in the licence the conditions as recommended by CNSC staff in CMD 10-H116.

Issues and Commission Findings

Qualifications and Protection Measures

7. CNSC staff reported that they have reviewed TRIUMF's application and consider it to be complete.
8. CNSC staff noted that the proposed modification involves reducing the radiation exclusion zone and allowing personnel access to one side of the ISAC II vault while the accelerator is in operation. CNSC staff added that they examined the following aspects and protections under the revised configuration: access control, radiation shielding, radiation monitoring, personnel monitoring and doses, and environmental releases.
9. CNSC staff indicated that a metal fence has been installed inside the vault to restrict worker access to the accelerator area, and that a new interlocked door has been installed, which will prevent operation of the accelerator if the door is open.
10. CNSC staff reported that a partial concrete wall shield has been installed inside the vault, and that TRIUMF's radiation surveys and calculations demonstrated that the integrated (neutron and gamma) dose rates expected in the area would be in compliance with TRIUMF's policy on radiation exposure³. CNSC staff added that a pair of neutron and gamma monitors has been added along the exclusion area boundary in the proposed work area to supplement the radiation monitoring system already in place for the areas surrounding the accelerator facility. A manual radiation survey instrument will also be positioned in the work area.

³ CNSC staff confirmed that TRIUMF's internal policy on radiation exposure states that there should not be radiation dose rates higher than 1 μ Sv (0.001 mSv) per hour (averaged over 24 hours) in a high occupancy work area. This radiation field would give an annual radiation exposure of up to 2 mSv to a worker if always exposed to it during his/her work (2000 hours per year) with the accelerator continuously operating at the maximum exposure level.

11. CNSC staff explained that, in addition to the use of personal dosimeters, TRIUMF has agreed to install area integrated dosimeters to monitor the integrated dose and radiation workload in the area and to issue neutron dosimeters to the workers in the area. CNSC staff added that, according to TRIUMF's estimates, the annual worker doses in the area would be less than 1 mSv.
12. CNSC staff indicated that the proposed modifications will not have any impact on the environment, and that the existing safety and protection provisions do not require amendment. CNSC staff added that this amendment request does not require additional security measures and therefore does not have any impact on the security program at the TRIUMF facility.
13. CNSC staff stated that the requested amendment will not affect the safeguards requirements because the quantity of nuclear material currently in TRIUMF's possession and the use of nuclear material remains the same.

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*⁴ (CEAA) have been fulfilled.
15. CNSC staff reported that it had completed an Environmental Assessment (EA) determination. CNSC staff stated that there was no requirement for an EA pursuant to subsection 5(1) of the CEAA.
16. The Commission is satisfied that all applicable requirements of the CEAA have been fulfilled.



Michael Binder
President,
Canadian Nuclear Safety Commission

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Date

⁴ S.C. 1992, c. 37.