

Record of Proceedings, Including Reasons for Decision

In the Matter of

Applicant TRIUMF Accelerators Incorporated

Subject Financial Guarantee for the Future
Decommissioning of the TRIUMF Particle
Accelerator Facility Located in Vancouver,
British Columbia

Hearing
Date December 5, 2007

RECORD OF PROCEEDINGS

Applicant: TRIUMF Accelerators Incorporated

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

Purpose: Financial Guarantee for the Future Decommissioning of the TRIUMF Particle Accelerator Facility Located in Vancouver, British Columbia

Application received: N/A

Date(s) of hearing: December 5, 2007

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

Members present: L.J. Keen, Chair A. Harvey
A.R. Graham

Secretary: M.A. Leblanc

General Counsel: S. Maislin Dickson

Recording Secretary: S. Dimitrijevic

Applicant Represented By	Document Number
<ul style="list-style-type: none">• N. Lockyer, President and CEO• W. Warren, Legal Counsel	CMD 07-H24.1 CMD 07-H24.1A
CNSC staff	Document Number
<ul style="list-style-type: none">• B. Howden• J. Schmidt• D. Howard	CMD 07-H24 CMD 07-H24.A

Licence Condition: Requirements met
Date of release of Decision: December 21, 2007

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Introduction

1. TRIUMF Accelerators Incorporated (TAI) has applied to the Canadian Nuclear Safety Commission¹ (CNSC) to request acceptance of the proposed financial guarantee for the future decommissioning of its Class IB particle accelerator facility, TRIUMF facility, located at Vancouver, BC.
2. The proposed financial guarantee has been submitted pursuant to licence condition 9.1 of the operating licence PA1OL-01.00/2012 (the Licence). The proposed financial guarantee comprises three documents: *CNSC Financial Security and Access Agreement*, *Escrow Agreement* and *Licensee Contribution Gap Agreement*.
3. Subsection 24(5) of the *Nuclear Safety and Control Act*² (NSCA) gives the Commission the authority to require that a licensee provide a financial guarantee in a form that is acceptable to the Commission. CNSC Regulatory Guide G-206³ provides guidance on the attributes of an acceptable financial guarantee in terms of liquidity, certainty of value, adequacy of value and continuity.
4. In accordance with subsection 24(5) of the NSCA, the Commission required in the licence that TAI provide, no later than April 1, 2008, a financial guarantee for the future decommissioning of the facility that is acceptable to the Commission.

Issues

5. In considering the application, the Commission was required to decide if the submitted documents, *CNSC Financial Security and Access Agreement*, *Escrow Agreement* and *Funde Contribution Gap Agreement*, constitute an acceptable financial guarantee for the future decommissioning of TAI's Class IB particle accelerator facility located in Vancouver, British Columbia, pursuant to Condition 9.1 of the Licence.

Hearing

6. A Panel of the Commission (hereafter referred to as the Commission), in making its decision, considered information presented for a public hearing held on December 5, 2007 in Ottawa, Ontario. During the hearing, the Commission considered a written submission from TAI (CMD 07-H24.1 and CMD 07-H24.1A) and CNSC staff (CMD 07-H24 and CMD 07-H24A). The public hearing was conducted in accordance with the *Canadian Nuclear Safety Commission Rules of Procedure*⁴.

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 CNSC Regulatory Guide G-206, *Financial Guarantees for the Decommissioning of Licensed Activities*, June 2000.

⁴ S.O.R./2000-211.

Decision

7. Based on its consideration of the matter, as described in more detail in the following sections of this *Record of Proceedings*,

the Commission, pursuant to subsection 24(5) of the *Nuclear Safety and Control Act*, accepts the financial guarantee proposed by TRIUMF Accelerators Inc. for the future decommissioning of its Class IB particle accelerator facility located in Vancouver, British Columbia.

8. With this decision, the Commission requests that the licensee present annual reports to the CNSC staff on the status of the financial guarantee and available funds, as well as on all changes regarding Preliminary Decommissioning Plan.
9. The Commission also requests that TAI notifies the Commission and CNSC staff upon transfer of the one-time payment of CDN \$6.2 million from the Treasury Board of Canada to the escrow account. The Commission further requests to be notified on any problem that might occur with respect to this transfer.

Issues and Commission Findings

10. In making its decision, the Commission considered a number of issues related to the acceptability of the financial guarantee submitted by TAI.
11. The decision is based on the Commission's consideration of all of the information and submissions available on the record for the hearing.

Facility Description

12. TRIUMF is a joint venture of six Canadian universities. TAI has been incorporated by the universities, members of TRIUMF, as a non-share capital corporation that holds the Licence and facility assets and has responsibility to fulfil regulatory requirements under the NSCA.
13. The TRIUMF facility consists of one large cyclotron accelerator of up to 520 Mega electron Volts (MeV) of energy, two associated heavy ion linear accelerators, ISAC I and ISAC II, four small cyclotrons between 13 MeV and 42 MeV and radioisotope laboratories and support facilities some of which use various nuclear substances.

14. The facility is used for research in the fields of nuclear and particle physics and for the production of various radioisotopes, mainly used in medical facilities. Three small cyclotrons are engaged in the production of radioisotopes for MDS Nordion.
15. The Commission inquired on the age and expected life-time of the equipment. TAI responded that the facility is about 30 years old and that the average lifetime of the equipment is also about 30 years. TAI added that the equipment is regularly updated and modernized to extend its use.
16. Asked about potential plans for an immediate decommissioning of certain parts of the facility, TAI responded that such an option was not considered. Instead, the intention is to refurbish, modernize and use the equipment as long as needed and possible.
17. The Commission further inquired about the future financial sustainability of the operation. TAI stated that the operation of the facility is primarily funded through a quinquennial grant from the National Research Council. The current contribution will end in 2010 and TAI is already preparing a proposal for the next five-year period.

Preliminary Decommissioning Plan

18. TAI informed the Commission that it has completed a revision and addendum to the Preliminary Decommissioning Plan (PDP) so to include the ISAC II accelerator and the newest small cyclotron and to provide schedule details and timelines for the pre-decommissioning activities.
19. TAI further informed the Commission that it had organized the decommissioning plan into five work “envelopes”. Each “envelope” represents a part of the facility that has different needs and requirements with respect to decommissioning:
 - Envelope I – Offices / Trailers and Support Facilities
 - Envelope II – ISAC-I Facility
 - Envelope III – MDS Nordion
 - Envelope IV – Main Accelerator Building / Annexes and Remote Handling
 - Envelope V – ISAC-II Facility

The classification has been based on distribution of radiation throughout the facility structures and components.

20. TAI stated that the decommissioning has been divided into phases. Phase 1 would start two years after shutdown and would last two years, during which envelopes I and V would be decommissioned. Phase 2 is planned to start 20 years after shutdown and to last one year. During this phase, envelopes II and III would be decommissioned. Phase 3, the decommissioning of envelope IV, would start 45 years after shutdown. Before beginning Phase 1, the site would be prepared for decommissioning and brought to a safe state of closure.

21. TAI presented to the Commission two options for the future decommissioning of the facility. The first option, named Option A, is based on an assumption that it would be possible to clean up and re-use some parts of the facility for a different purpose. Demolition of the buildings is not foreseen in this option. The second one, Option B, comprises demolition of the structure and return of the whole site to greenfield condition.
22. As part of the preparatory activities for decommissioning, the plan anticipates an environmental assessment and a licensing process for a facility decommissioning licence.
23. The cost of decommissioning has been estimated at CDN \$ 38.716 million for Option A, and CDN \$ 44.101 million for Option B. All estimates have included a contingency factor of 30% and cost escalation factors for a five-year period based on 2.3% annual rate.
24. CNSC staff stated that it had completed its review of the revisions of the PDP. The opinion of CNSC staff was that the previously identified deficiencies have been eliminated and that the decommissioning cost estimate is acceptable.

Financial Guarantee Proposal

25. TAI informed the Commission that its proposal comprises the financial guarantee that addresses Option B. The financial guarantee was presented in the form of three documents:
 - *CNSC Financial Security and Access Agreement* that contains the financial guarantee component contributed by each of the full members of TRIUMF and has been written to ensure the CNSC, the members of TRIUMF and the TAI have access to the decommissioning fund in the event of decommissioning of the facility;
 - *Escrow Agreement* which appoints the Royal Trust Corporation of Canada as the Escrow Agent for the TRIUMF decommissioning fund. The *Escrow Agreement* has been written to reflect the provisions of the *CNSC Financial Security and Access Agreement*, permitting access to the escrow fund by CNSC and TAI in accordance with the provisions of the Access Agreement; and
 - *Fund Contribution Gap Agreement*, which provides the mechanism for the licensee to request from each full member of TRIUMF a portion of the difference between the decommissioning costs and the funds available for decommissioning if the funds available through the escrow account are insufficient.
26. TAI also presented to the Commission a draft of the amended *Joint Venture Agreement*, which incorporates references to the three documents that provide the universities' financial covenant for the decommissioning fund. TRIUMF management committed that the agreement will be signed by the full member universities and submitted to CNSC staff by March 31, 2008.

27. TAI informed the Commission that the escrow account would be formed from an initial deposit of CDN \$ 6.6 million and supplementary annual deposits of CDN \$ 1 million, starting on or before April 1, 2008 and ending on April 1, 2010. As of that date, the account would hold CDN \$ 9.6 million plus the amounts earned.
28. The initial deposit would include CDN \$ 6.2 million from the Treasury Board of Canada, which would be released upon the Commission's acceptance of the financial guarantee agreement.
29. CNSC staff informed the Commission that it finds the proposed funding scheme acceptable.
30. CNSC staff estimated that the funds available after formation of the escrow account would be sufficient to bring the facility into the safe state of closure. The scheduled deposits, the projected interest earned through the escrow account and the *Fund Contribution Gap Agreement* would cover the cost of decommissioning the TRIUMF facility.
31. The Commission inquired on the projected status of the funds in the escrow account by the end of the current licence period. TAI stated and CNSC staff concurred that by April 2010 the contribution from TRIUMF and full member universities would amount to CDN \$ 9.6 million and that by the end of the licence period, by March 31, 2012, the value of the fund would be increased by the amount of the interest earned.
32. The Commission asked CNSC staff if it would expect the escrow account to contain the full amount of the decommissioning estimate, so that the *Fund Contribution Gap Agreement* becomes unnecessary. CNSC staff responded that it finds satisfactory that the funds needed for pre-decommissioning activities and completion of the Phase 1 are in place. CNSC staff further stated that, since the decommissioning is a phased process, a risk-based document, such as the *Fund Contribution Gap Agreement*, is acceptable.
33. The Commission sought CNSC staff's opinion on the adequacy of the presented agreement documents. CNSC staff responded that it has done a comprehensive review of the agreements and that it had found that the agreements were acceptable in all aspects.
34. The Commission asked how changes in the TRIUMF membership would affect the sustainability and stability of the financial obligations of the member universities with respect to decommissioning of the facility. TAI responded that each of the agreements has been designed to accommodate the addition of new members to TRIUMF and to include their contribution to the decommissioning funds.
35. CNSC staff added that the documents also include the procedure for ending the membership in TRIUMF. The documents describe a mechanism for the contribution of leaving members to the decommissioning funds. The amount of the contribution would be calculated based upon the formula developed for the cases where the funding gap exists at the time when membership ends.

36. The Commission sought assurance that the CNSC staff will be informed on a regular basis on the status of the escrow account and earnings of the funds. CNSC staff stated that clauses within the agreement documents require that the licensee provide a yearly estimate of the fund value. CNSC staff added that there is also a clause which allows CNSC staff to request at any time information on the fund value.
37. The Commission sought further information on a possible revision of the estimated decommissioning cost before the expiration date of the Licence. CNSC staff responded that, with respect to licence renewal, the licensee is required to revue the PDP, address the changes and reconsider the decommissioning cost estimate. CNSC staff added that upgrades, modifications and other changes within the facility could affect the PDP and estimated decommissioning cost. In such a case, revisions with changes in financial guarantee agreements would be presented to the Commission for consideration.

Conclusion

38. The Commission has considered the information and submissions of TAI and CNSC staff as presented in the material available for reference on the record.
39. The Commission is of the opinion that the presented agreements submitted by TRIUMF Accelerators Incorporated represent an acceptable financial guarantee and concludes that the licensee has fulfilled the requirements of licence condition 9.1 of the licence PA1OL-01.00/2012.
40. The Commission therefore accepts the proposed documents as the financial guarantee provided by TRIUMF Accelerators Incorporated for the future decommissioning of its Class IB particle accelerator facility located in Vancouver, British Columbia.
41. The Commission requests that the licensee present annual reports to the CNSC staff on the status of the financial guarantee and available funds, as well as on all changes regarding the Preliminary Decommissioning Plan.

Linda J. Keen,
President
Canadian Nuclear Safety Commission

Date of release of Decision: December 21, 2007