



Terms of Reference

Peer Review of TRIUMF

April 15, 2013



Prepared by:

Office of Audit and Evaluation

National Research Council Canada

1. Context

An evaluation of the National Research Council (NRC) contribution to TRIUMF is being evaluated proposed for the fiscal year 2013-2014. This evaluation will cover the period between 2008-2009 and 2012-2013. It will be carried out in accordance with NRC's approved evaluation plan and Treasury Board Secretariat (TBS) policies. NRC's current transfer payment for the TRIUMF program requires an evaluation at this time in order to meet stipulated accountability requirements under the Financial Administration Act and to support the renewal process for the terms and conditions of TRIUMF, to be prepared by 2015. As directed by the TBS Policy on Evaluation, the evaluation will focus on the relevance and performance of TRIUMF over the past 5 years, discussed in more detail in Section 3.

The objectives of this evaluation are:

- To provide information to NRC senior executives and managers on the relevance, performance, economy and efficiency of the Program and to provide them with information that may contribute to program improvements; and
- To provide credible, timely and neutral information on the value-for-money (relevance and performance) of the TRIUMF program in order to support future decision-making.

As fulfillment of TRIUMF's goals draws upon resources beyond those provided via the Contribution Agreement, the full slate of activities and outcomes of TRIUMF will be considered as part of the evaluation.

This peer review is being conducted as one component of the larger evaluation. The evaluation will also include other lines of evidence: a document review, a review of administrative and performance data, key informant interviews, a survey of TRIUMF's users, and a comparison study of similar large-scale sub-atomic physics facilities.

2. Program Overview

The National Research Council Act mandates the NRC to undertake, assist or promote scientific and industrial research in different fields of research for Canada. The Program funding to TRIUMF ensures Canada's contribution to the worldwide network of subatomic-physics facilities. This mandate is carried out by the office of Vice-President of Emerging Technologies Division, which manages NRC's financial contribution to TRIUMF.

TRIUMF functions as a national laboratory and as Canada's gateway to the international subatomic-physics community. Physically located on the campus of the University of British Columbia (UBC), TRIUMF is owned and operated by a consortium of Canadian universities. As Canada's national facility for research in particle and nuclear physics, TRIUMF is funded primarily by the Government of Canada (via the NRC, NSERC and CFI). Between the periods of 2007-08 to 2011-12, NRC's proportion of contribution to total funding/income received from all sources was approximately 67%.

The central part of TRIUMF's research and technical infrastructure is the world's largest cyclotron particle accelerator, as well as smaller cyclotron and linear accelerators. Using these accelerators, TRIUMF's work spans both pure and applied research and commercial applications in nuclear

medicine, particle and nuclear physics, accelerator science and technology, and materials science. The specific activities conducted by TRIUMF include:

- **Ongoing research support and training** by operating and maintaining the cyclotron and rare-isotope beam facilities; providing access for researchers to TRIUMF facilities and managing time allocations; providing support to the experimental program and sub-atomic physics community in Canada; and, organizing education and outreach activities.
- **International activities**, such as spearheading Canadian participation in large-scale international projects such as the LHC and the ATLAS detector at CERN and the T2K neutrino experiment in Japan; and acting as Canada's gateway to the world of international sub-atomic physics through various agreements.
- **Commercialization activities**, such as technology transfer and research commercialization, and the development and implementation of procurement and contract policies and strategies to develop new Canadian supplier capabilities.

3. Peer Review Approach

The TRIUMF peer review process will include three components: the review of background material, participation in the site visit to TRIUMF and producing the Peer Review report. As part of the Peer Review Committee, members are responsible for:

- becoming familiar with the research activities and management practices of TRIUMF and reviewing briefing materials;
- participating in a conference call in advance of the site visit;
- attending and actively participating in the peer review process including the site visit;
- providing input into the peer review report; and
- reviewing the draft peer review report and providing written comments.

Briefing material will be sent out to Peer Review Committee members for their review prior to the site visit. This material will include the Five-Year Plan submitted by TRIUMF outlining the facility's planned future activities, as well as the findings of the other evaluation lines of evidence completed prior to the peer review site visit. A number of other documents such as TRIUMF's Biennial Report on Scientific Activities, TRIUMF's Annual Financial & Administrative Report, TRIUMF's Annual Business Development Report and Reports from the Advisory Committee on TRIUMF will also be included.

The peer review process will include a three day on-site visit at TRIUMF in Vancouver, British Columbia. The visit is presently scheduled for **13-15 November 2013**. The visit will include presentations and discussions on past, current and proposed research activities, as well as tours of TRIUMF facilities.

Following its review of TRIUMF's activities, the Peer Review Committee will identify key findings, conclusions and recommendations to include in the Peer Review Report. Further, the Committee may elect to debrief the facility's Director on its initial findings as part of the review, although the primary client for the peer review, and the evaluation overall, is the President of NRC.

NRC Office of Audit and Evaluation will support the writing of the peer review report. Committee members will be requested to provide comments on the draft and final versions of the Peer Review Report within approximately one month of the site-visit. Following the finalization of the Peer Review

Report, it will be integrated into the larger evaluation report, to be prepared by the NRC Office of Audit and Evaluation.

4. Scope and Issues

The evaluation period will cover FY2008-2009 to FY2012-2013 inclusive, as such, the peer review is also intended to focus retrospectively on TRIUMF's activities over that period. The Peer Review Committee is being asked to address specific questions through the peer review, which were informed by the overall evaluation questions. The evaluation questions were developed based on the core evaluation issues stipulated in the Treasury Board Policy on Evaluation (2009), as well as consultations undertaken during the planning phase of the evaluation and a review of key documents.

In addition to the retrospective assessment conducted to support the evaluation, the Peer Review Committee is being asked to provide input into the Strategic Plan being developed by TRIUMF for their next five years of activity. The questions to be addressed through the peer review are listed in Table 1, below.

The Peer Review Committee will also be asked to comment on the findings of the other evaluation methods to date, which will be provided to committee members in advance of the site visit. If additional questions are identified throughout the conduct of other evaluation methods, the Committee may be asked to comment on them, as well.

Table 1: Peer Review Questions

Relevance
1. What is the role of TRIUMF in supporting Canadian and international scientists and students?
Performance
2. To what extent are TRIUMF's research activities, on a national and international scale, considered leading edge?
3. To what extent has key knowledge been generated as a result of TRIUMF's activities?
4. To what extent has TRIUMF elevated Canada's reputation and international leadership in physics?
5. To what extent is TRIUMF supporting the development and training of students and postdoctoral researchers?
6. How appropriate are TRIUMF's activities related to technology transfer and commercialization? How effective have they been in enabling the Canadian industry to become more competitive?
7. Have there been unintended outcomes (positive or negative) as a result of TRIUMF's activities?
8. To what extent does TRIUMF's governance and management models effectively support its objectives? Are there gaps or redundant elements that inhibit progress or economies?

Future Direction
9. Are the proposed activities included in TRIUMF's 5-year plan appropriate and consistent with the needs and ambitions of the physics community, both in Canada and internationally? Will the plan elevate Canada's reputation and international leadership in nuclear medicine, nuclear physics, materials science, particle physics and accelerators research?
10. Do the requested resources and the laboratory's capabilities give reasonable confidence that the activities of the 5-year plan can be carried out to achieve the stated outcomes?

5. Committee Membership

The TRIUMF Peer Review Committee will be made up of approximately 8 individuals external to TRIUMF and NRC, who possess expertise in TRIUMF's research areas, as well as members with expertise managing large scale scientific facilities and with experience working in industry. One member will act as Chair of the Committee.

A representative from NRC Office of Audit and Evaluation (OAE) will act as Secretariat to the Committee.

Committee membership was identified based on recommendations from several sources including the NRC Vice-President, Emerging Technologies Office; TRIUMF; members of TRIUMF's Advisory Committee (ACOT); and the evaluation Subject Matter Experts (SMEs) who are providing guidance to the evaluation team throughout the study. The Committee's membership was drawn from national and international academia, other government laboratories/departments, and relevant public and private sector organizations.

Selection is based on members' qualifications in the areas being reviewed, their credibility, and their reputation for objectivity and neutrality. As well, efforts are made to form a balanced Committee taking into consideration such criteria as sector and region. Members should be able to participate in the process in an objective, unbiased and credible manner. There should be no apparent or potential conflict of interest.

6. Project Clients and Stakeholders

The primary client for this evaluation, and the peer review, is the President, NRC. The primary intended users of the evaluation findings that will be generated by this study include:

- Vice-President, Emerging Technologies Division;
- Director and Management of TRIUMF
- TRIUMF Board of Management.

Additional evaluation stakeholders include:

- Other Canadian federal and provincial funding organizations, including Industry Canada;
- TRIUMF users and collaborators;

- The national and international scientific community, in particular those participating in the sub-atomic physics program in Canadian universities, or working in the fields of nuclear physics, particle physics, accelerator science and technology, materials science and nuclear medicine; and industry users of physics knowledge and tools.

7. Project Governance

The project will be managed by the NRC Office of Audit and Evaluation (OAE). Accountabilities and responsibilities have been defined in the tables below.

Table 2: Project Management

Roles	Accountabilities and responsibilities
Director, OAE	Will maintain, on behalf of OAE, overall accountability for the evaluation.
Evaluation Manager, OAE	Will be responsible for conducting and overseeing the day-to-day management of the evaluation and will maintain on behalf of OAE overall responsibility for the successful completion of the project.
Peer Review Coordinator, NRC-OAE	Will be responsible for the day-to-day management of the peer review (including the establishment of committee membership and logistics in support of the site visit) and act as the secretary to the TRIUMF peer review committee.
Director, TRIUMF	With support from the peer review coordinator, will be responsible for the provision of background material for the Peer Review Committee members and preparation of material for the site visit.

Table 3: Project Direction and Integrity

Roles	Accountabilities and responsibilities
President, NRC	Will review and approve the evaluation report.
NRC Senior Executive Committee (SEC)	Acting as NRC's Departmental Evaluation Committee, will review and, ultimately, endorse the Terms of Reference for the evaluation as well as the final evaluation report.
Vice-President, Emerging Technologies Division	Will provide input into the evaluation at key stages in the process. As the Executive accountable for the NRC's Contribution to TRIUMF, the VP, Emerging Technologies Division will, in consultation with the Director, TRIUMF, respond to recommendations through a management response action plan (MRAP) following delivery of the evaluation report.
Director, TRIUMF	Will provide input into the evaluation and peer review throughout the process, including the identification of Committee members and the development of the questions to be assessed through the peer review. Will work with the Vice-President, Emerging Technologies Division, to respond to evaluation recommendations.
Methodological and Subject Matter Experts	Will provide expert advice and input at key stages during the evaluation process, such as the planning phase, identification of potential Peer Review Committee members, and on the draft evaluation report.

8. Communications

NRC will communicate with Committee members primarily by e-mail and telephone. However, briefing material on TRIUMF will be couriered to Committee members prior to the site-visit for their review. All enquiries about the logistics of the peer review process may be directed to Rebecca Hart by email at Rebecca.Hart@nrc-cnrc.gc.ca or by telephone at 613-990-1580.

9. Travel

All members of the TRIUMF Peer Review Committee will be reimbursed at cost for travel expenses in accordance with NRC administrative policy within the context of the National Joint Council Travel Directive (<http://www.njc-cnm.gc.ca/index.php?lang=eng>).¹ NRC Office of Audit and Evaluation (OAE) will assist in making travel arrangements, including hotel reservations. NRC-OAE may also provide recommendations with respect to air/ground transportation. It is the members' responsibility to submit travel claims in a timely manner (i.e., 2 to 3 weeks following travel).

¹ It should be noted that, in accordance with Treasury Board of Canada Secretariat Travel Directive, only economy class air travel will be reimbursed for Peer Review Committee members.