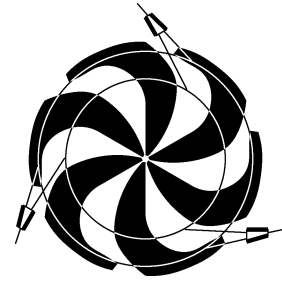


TRIUMF



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**CANADA'S NATIONAL LABORATORY
FOR PARTICLE AND NUCLEAR PHYSICS**

OPERATED AS A JOINT VENTURE

MEMBERS:

THE UNIVERSITY OF ALBERTA
THE UNIVERSITY OF BRITISH COLUMBIA
CARLETON UNIVERSITY
SIMON FRASER UNIVERSITY
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QUEEN'S UNIVERSITY
THE UNIVERSITY OF REGINA
SAINT MARY'S UNIVERSITY

UNDER A CONTRIBUTION FROM THE
NATIONAL RESEARCH COUNCIL OF CANADA

DECEMBER 2006

The contributions on individual experiments in this report are outlines intended to demonstrate the extent of scientific activity at TRIUMF during the past year. The outlines are not publications and often contain preliminary results not intended, or not yet ready, for publication. Material from these reports should not be reproduced or quoted without permission from the authors.

ADMINISTRATION DIVISION

INTRODUCTION

The Administration Division is made up of Human Resources and Administration, Accounting and Materials Control, Administrative Computing, and Safety. The manager of each group reports to the Director. A summary of Division activities is included in this report.

HUMAN RESOURCES AND ADMINISTRATION

TRIUMF has approximately 350 employees paid from its operating funds and approximately 125 term appointments funded through grants or affiliated institutions.

All employees are reviewed for performance on an annual basis. The period covered for Performance Planning and Review coincides with the calendar year.

TRIUMF has a very strong student program and hires some 30 summer students per year in addition to approximately 10 university co-op students who are hired each term.

We have yet to establish a TRIUMF alumni Web site, but plan to have it in operation by the end of 2006. All retired TRIUMF employees and regular visitors to TRIUMF will be eligible to become members of this alumni group.

TRIUMF attracts up to 400 visiting scientists per year. Visitor information such as their home institution, length of stay, contact person at TRIUMF, radiation badge, and keys issued is maintained by TRIUMF.

The TRIUMF security card access system is working well with approximately 1200 active security cards. All employees and long-term visitors are required to wear a photo ID card. All short-term visitors, those visitors of less than three weeks, are required to wear a Visitor badge. Security guard coverage continues between 6:00 pm and 6:00 am on working days with twenty-four hour coverage on weekends and statutory holidays. All vehicles accessing the site behind the security fence are required to have a permit.

The insurance program was renewed with no increase in premiums over the previous year. Third party liability coverage remains at \$50M. All buildings operated by TRIUMF are owned by the University of British Columbia since they are located on university land and the Canadian Universities Reciprocal Insurance Exchange (CURIE) provides insurance coverage for these buildings and contents.

There are currently six full member and seven associate member universities in the Joint Venture.

TRIUMF complies with Federal Treasury Board

requirements under a Results-based Management and Accountability Framework. The purpose of this framework is to establish a mechanism to help the National Research Council (NRC) and TRIUMF: i) collect performance information related to this initiative; ii) track delivery of commitments and reporting; iii) describe how the success of TRIUMF will be evaluated over time; and iv) provide direction for on-going and future planning.

ENVIRONMENT HEALTH AND SAFETY

Licensing

An amendment to the TRIUMF Operating Licence that incorporates a protocol for reviewing irradiation of materials at TRIUMF that are not explicitly listed as “targets” in the Operating Licence was issued by the Canadian Nuclear Safety Commission (CNSC). Several other changes were made to the licence:

1. The licence condition requiring TRIUMF to submit a QA Program (this condition had been met).
2. The licence condition requiring TRIUMF to submit a Preliminary Decommissioning Plan (this condition had also been met).
3. A limit of 100 μ A was applied to BL2A.
4. The name of the licensee was changed to include the University of Toronto on the list of the member universities.

A submission to obtain an amendment to the ISAC-II construction licence to allow commissioning of the first stage of the ISAC-II accelerator was submitted to the CNSC. At year’s end the amendment had all but been approved pending a “verification” inspection by CNSC staff.

Personnel Dosimetry

The collective dose for TRIUMF personnel for the year 2005 was 402.7 mSv as measured by the direct reading dosimeter service. Table LIV shows the breakdown of the collective dose by various work groups. The collective dose was somewhat lower than for 2004. ISAC continues to make a relatively minor direct contribution to the collective dose.

Interlocks and Monitoring

Installation of the ISAC-II Access Control System and the extension of the ISAC Radiation Monitoring System to ISAC-II was completed except for some final connections to beam control devices. The installation should be complete in time for the ISAC-II commissioning early in 2006.

Table LIV. Collective dose for TRIUMF personnel by group.

Group	Dose (mSv)	Fraction of total (%)	Median (mSv)
Applied Technology	137.2	34.1	3.2
500 MeV Operations	54.1	13.4	3.2
Remote Handling	30.0	7.4	2.8
Life Sciences	22.2	5.5	0.9
Safety Group	22.0	5.5	0.7
Beam Lines/Probes	21.6	5.4	1.3
RF Group	19.5	4.8	3.1
Plant Group	19.4	4.8	0.6
Vacuum Group	17.4	4.3	1.3
Tech Support	8.8	2.2	0.6
RF Development	8.2	2.0	1.5
Science Division	6.4	1.6	0.1
ISAC Operations	3.4	0.8	0.1
Outside Contractors	1.4	0.3	0.1
Others	24.7	6.1	—
Total	402.7	100.0	0.6

As part of a meson hall refurbishing program, the M20 Access Control Interlock System was rebuilt using standard PLC hardware and software.

Occupational Health and Safety

All TRIUMF's Occupational Health and Safety Programs continued to run smoothly.

The TRIUMF Emergency Plan was revised to conform to the CNSC Regulatory Guide G-225, *Emergency Planning at Class-I Nuclear Facilities and Uranium Mines and Mills*.

MIS: ADMINISTRATION COMPUTING, WEB SERVING, AND TELECOM

Management Information Systems

The MIS database, application, and Web server admin.triumf.ca was upgraded to the latest release of operating system and associated software. This included migrating the MIS Web server application to Apache. A thin client environment was set up for selected MIS users, based on LTSP (Linux Terminal Server Project). The LTSP environment is now also used to support Web-based Stores Catalog kiosks.

There were incremental changes to many administration applications and Web utilities; the most significant new capabilities in 2005 were the ability for TRIUMF's Accounting Department to do pre-authorized withdrawals from individuals' bank accounts (used to pay for post-retirement benefit programs), and to do direct-deposit (used for accounts payable). This latter capability was initially used to support payments of expense reimbursements for employees, and at the end of

the year was also being used to pay selected Canadian vendors for goods and services.

The LDAP (Lightweight Directory Access Protocol) on the central MIS system was expanded in purpose. For several years, this LDAP has been used to provide on-line telephone and e-mail directory services; it was expanded to allow it to be used as a centralized authentication server for Web servers and other LDAP authentication clients.

Web Services

Development continued on the TRIUMF main Web server, www.triumf.info. The site was moved to new, faster hardware running Scientific Linux 4, and a redundant server was installed to provide high availability of the Web site during times when the primary server needed maintenance or had failed.

The Users and Employees Web site was expanded to include more information with regard to the experimental program, research facilities, and research groups. Also, work was started on a Web-based experiments database, both to serve as an on-line repository of information on all experiments performed at TRIUMF, and also to act as an interactive utility for use during EEC meetings. It is expected that this database will be tested at the July EEC meetings, and will be available for the December meetings.

Both the main and administration Web servers were reconfigured to use the same authentication LDAP that is now running on the central MIS database system.

The ability to run multiple wikis was added to the main Web server. These wikis, implemented using MediaWiki software, allow groups at TRIUMF to maintain their own documentary information on the Web; each of these wikis can use its own rules to control which individuals can read and/or update information; the authentication for these wikis is also the MIS LDAP service. The first wiki implemented was used for internal MIS documentation; this was followed by others for the TWIST experiment, the TUG Users Manual, and ATLAS Computing.

The administration Web server, admin.triumf.ca, was used to support the registration and payment of four conferences in 2005: WNPPC05, the 2005 CAP/ACP Congress, the T2K 280 m Near Detector Meeting, and WNPPC-06 (to be held early in 2006).

A Google search appliance was purchased to provide internal-only indexing and search capabilities for the site. This appliance was initially used to index the main and administration Web sites; additional sites will be added to the search index over time.

Telephones

The TRIUMF telephone system was upgraded to support Voice-over-IP (VoIP) capabilities for TRIUMF locals. This allowed TRIUMF House telephones to be connected to the main telephone switch using the same fibre that is used to provide high-speed networking to TRIUMF House. The same technology can now be used on the main site for any future expansions, thus requiring only a single communications infrastructure for both network and telephones. While this is cost effective for new site facilities, it is not expected that existing telephone wiring on the main site will be replaced by VoIP.

TRIUMF OUTREACH PROGRAM

The TRIUMF Outreach Program (TOP) entered its third year of operation with the generous support from the Vancouver Foundation and the TRIUMF Technology Transfer office. TOP has been focusing its outreach efforts on high school students and teachers, as well as the general public. The program has been making great strides towards achieving our goals, and these were put to the test as 2005 was the World Year of Physics (WYP2005).

World Year of Physics

TRIUMF was involved in a wide variety of WYP2005 events. At TRIUMF the Saturday Morning Lecture Series focused on talks highlighting Einstein's contributions to physics. The lectures were very well attended, averaging close to 100 people. On Saturday June 4 TRIUMF had a public Open House which was met with overwhelming response, with many hundreds of people of all ages keeping the tour guides busy all day. The next day a WYP2005 gala event was held at the Chan Centre at UBC as part of the CAP Conference, which was jointly organized by UBC Physics and TRIUMF. Earlier in the year TRIUMF helped organize a panel discussion on the play *Copenhagen* (about

Niels Bohr and Werner Heisenberg) at the Vancouver Playhouse, and collaborated with SFU and UVic in bringing cosmologist Rocky Kolb to Vancouver and Victoria for two sold-out talks on Einstein and cosmology. All in all the WYP2005 was received very well by everyone who took part.

Science Education Videos

TOP has embarked on a new initiative to produce a series of science education videos that will aim to demonstrate how the principles taught in high school physics are manifest at a major subatomic physics laboratory like TRIUMF. In keeping with the WYP2005 theme, the first video was on Einstein's special theory of relativity, where it showed how the effects of the theory can be measured in the M11 pion channel. The video was produced in cooperation with Richmond High School and teacher Philip Freeman. The DVD and accompanying booklet are being sent to high schools across Canada, and to date the response from teachers has been very positive. A grant request was submitted to NSERC PromoScience program for funds to create 3 more such videos in the coming years.

Other Activities and Future Plans

The high school teacher internship program has continued to attract keen interest from teachers across BC. We expect this program to attract 3–6 teachers a year to TRIUMF for years to come. The second TRIUMF High School Fellowship program attracted over 110 of the most outstanding graduating high school students from BC. Jacob Cosman from Kamloops was selected to receive the \$3000 fellowship, and he spent his 6-week term at TRIUMF with Professor Jess Brewer of UBC. This fellowship was considered to be very successful, so it will now be an annual award. This year the Technology Transfer office will sponsor a second student, and we hope that in the future two or more student winners per year will be selected.