

TRIUMF

University of Victoria

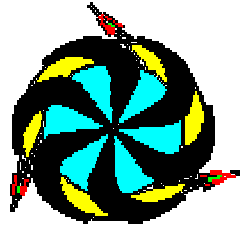
Visit of TRIUMF Director

Dr. Alan Shotter

24 October 2001

OUTLINE

- Overview of TRIUMF Engineer responsibilities
- Details on TRIUMF projects
- What the Victoria TRIUMF Group has to offer
- Future TRIUMF projects

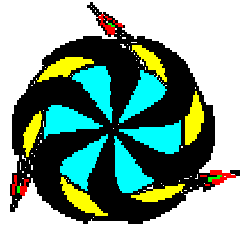


TRIUMF

TRIUMF Engineer: A.S. Dowling, B.Eng

Responsibilities

- All priorities are set by TRIUMF.
- Primary responsibility is responding to Requests for Engineering Assistance (REA)
 - Provide engineering support on TRIUMF projects such as:
 - ISAC
 - TWIST
 - ATLAS

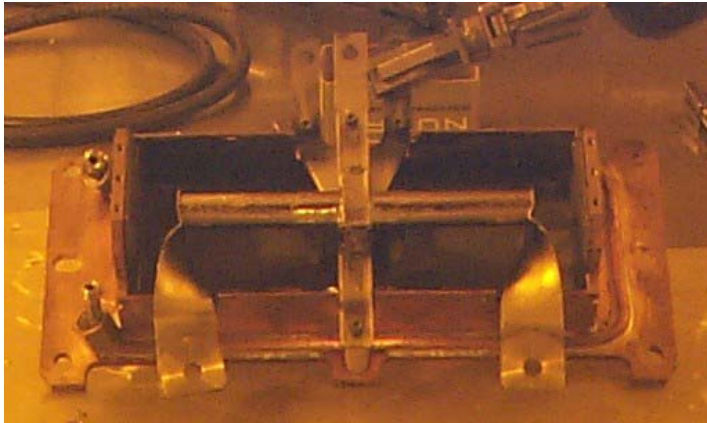


TRIUMF

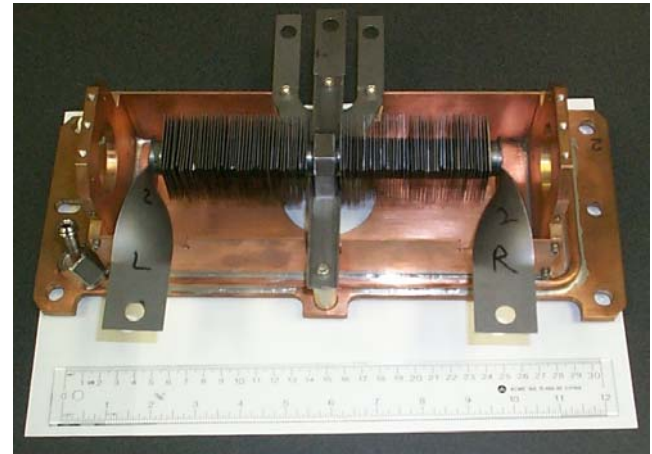
TRIUMF Engineer: A.S. Dowling, B.Eng

Current Projects

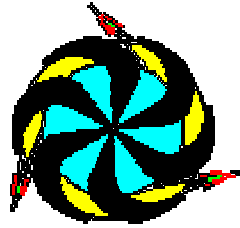
- ISAC – Target analysis
 - Determining whether the application of fins will allow sufficient heat to be dissipated from the target.
 - Extensive heat for long periods could damage the target.
 - Different scenarios are being studied (i.e. different fins shapes and application patterns).



ISAC Target – in hot cell at TRIUMF after being online.



ISAC Target with fins – ready for testing.

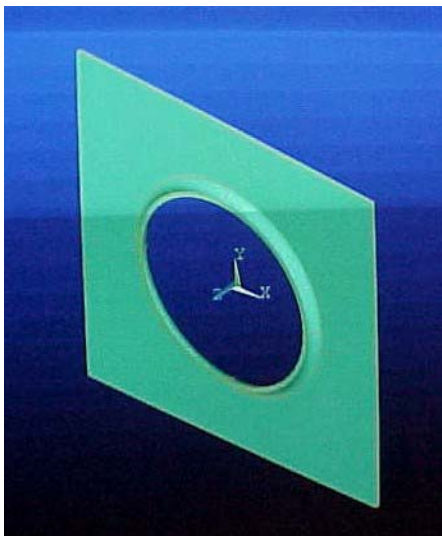


TRIUMF

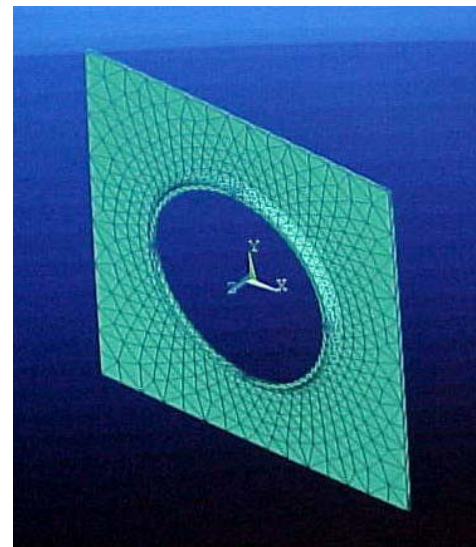
TRIUMF Engineer: A.S. Dowling, B.Eng

Current Projects

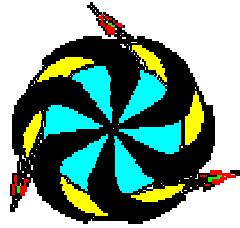
- ISAC – Target analysis
 - ANSYS (Finite Element Program) is used to provide results for the analysis.
 - Recently attended extensive training sessions.



ISAC Target Fin – 3D Model



ISAC Target Fin – Finite Element Model



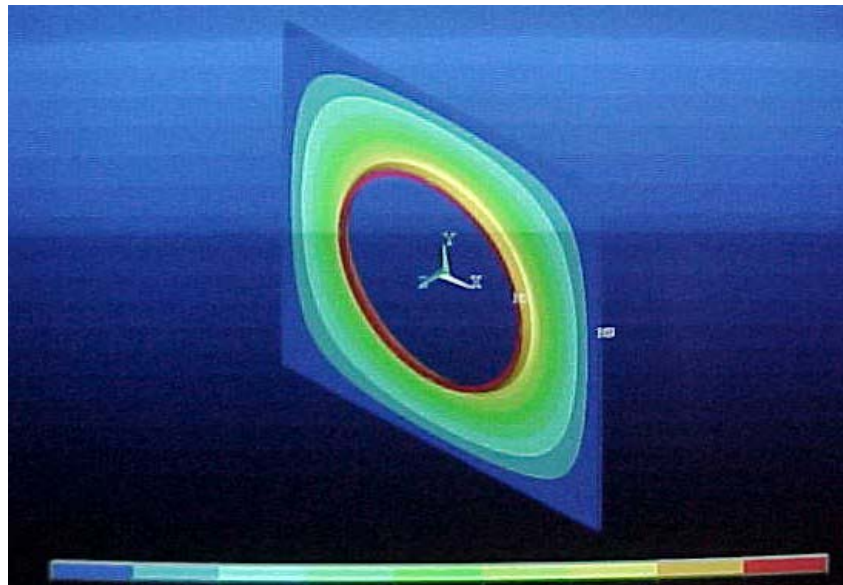
TRIUMF

TRIUMF Engineer: A.S. Dowling, B.Eng

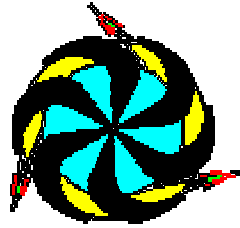
Current Projects

- ISAC – Target analysis

- The contact area between the fin and the beam tube is set at 2200°C, which represents the worst case scenario based on actual measurements.



ISAC Target Fin – Temperature Distribution (very preliminary work)

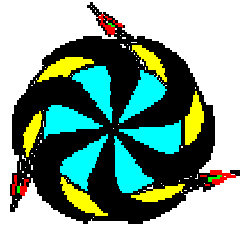


TRIUMF

TRIUMF Engineer: A.S. Dowling, B.Eng

Current Projects

- TWIST - Non-magnetic beam tube extension
 - Provided calculations that determine the minimum safe thickness of the extension.
- ATLAS – Thermal analysis for low voltage warm cables on HEC Feedthrough
 - Using ANSYS to determine if sufficient heat is being applied to avoid condensation building up on the wires.

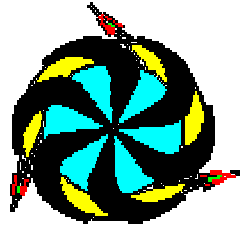


TRIUMF

TRIUMF Engineer: A.S. Dowling, B.Eng

Secondary Responsibilities

- Maintain the safety and integrity of TRIUMF labs and work areas
 - Lab 021 – TRIUMF Lab
 - Lab 022 – ATLAS Lab
 - Room 016 – TRIUMF Machine Shop
- Supervise TRIUMF personnel at UVic
 - Paul Birney (BCIT Tech), Roy Langstaff (British Hovercraft Tech), Mark Lenckowski (Camosun Tech)



TRIUMF

TRIUMF Designer: Mark Lenckowski, Camosun Tech (1989 to current)

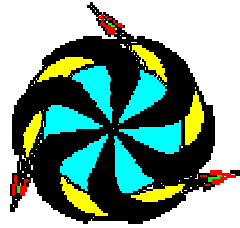
Current Projects

- ISAC – Beam Dump Modules for Target Stations

- Worked on design and detail of the original dump module.
- Working on design and detail of the dump module for the second ISAC Target Station.
 - Providing drawings for all components.
 - Involved with the machining and assembly of the Beam Dump Element
 - Construction of thermocouples and related feedthroughs
 - Assembling and testing components manufactured in Victoria



Beam Dump Element being assembled.

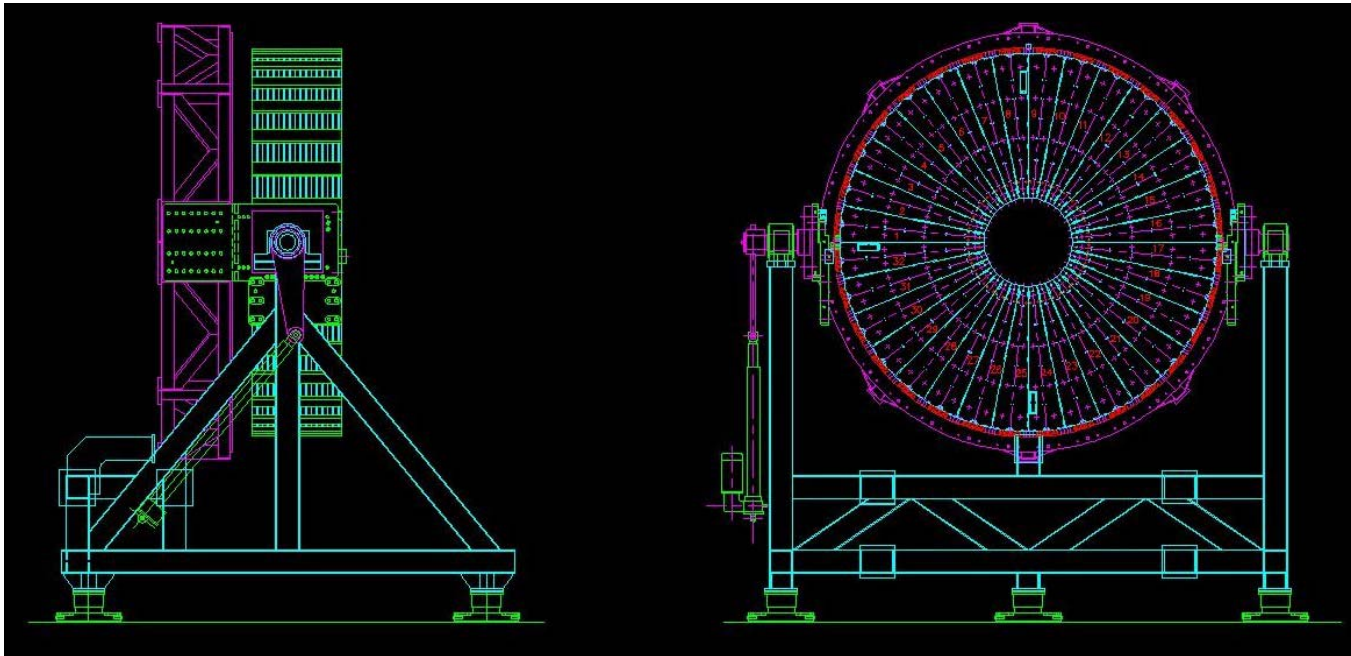


TRIUMF

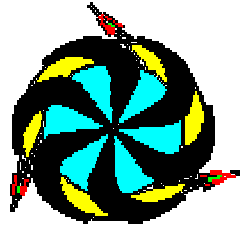
TRIUMF Designer: Mark Lenckowski, Camosun Tech (1989 to current)

Current Projects Continued

- ATLAS – HEC Modules (C. J. Oram)
 - Supervising the machining of datums and flat surfaces of the assembly table.
 - Researching electrical controls for the linear actuator to rotate the assembly table.



HEC Module
Assembly Table



TRIUMF

TRIUMF Technologist: Paul Birney, BCIT Tech (1986 to current)

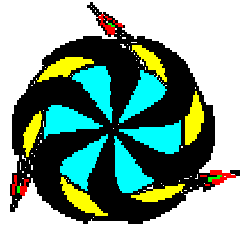
Current Project

- ATLAS - Feedthrough Project (Michel Lefebvre)
 - Tour of facility later

TRIUMF Designer: Roy Langstaff (1972 to current)

Current Project

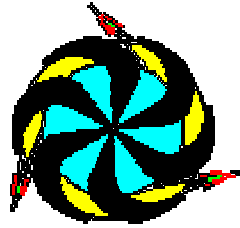
- ATLAS - Supervising and coordinating the assembly of the HEC Module at CERN (C.J. Oram)



TRIUMF

What Victoria TRIUMF Group has to offer

- Facilities to design, analyze, test and machine important components for any project prior to the stages where beam time is required.
- Sufficient high quality space to set up projects and test stations of moderate size.
- People with expertise to assist on many projects.
 - Engineering skills
 - Design and drawing skills
 - Manufacturing and production by skilled technical workers.
 - Free machinist time from Victoria Physics Machine Shop.



TRIUMF

Future projects Victoria can make critical contributions to:

- Further target analysis for ISAC and upcoming projects (ISAC II)
 - Conditioning centres
 - Used to heat cycle targets
 - Allows unstable materials to degas at higher temperatures.
 - Test and analysis stations (Research and Development)
 - Used to monitor temperature with thermocouples and optical pyrometer.
 - Results obtained can be used to control online target.
- Neutrino Factory Support
- Linear Colliders
- The latter two projects are starting to develop international attention.
- There is a long track record of Victoria being an excellent place to do very advanced design for crucial TRIUMF Projects.