MEETING WITH LARGE SUBATOMIC PHYSICS PROJECT COLLABORATIONS
Saturday February 10, 2001
NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL
350 Albert Street
Ottawa, Ontario

Council Chambers - 12th Floor
TERMS OF REFERENCE

This review will focus on subatomic physics projects with proposed funding levels in excess of $200k in 2001/2002 and that could require multi-year commitments by NSERC. The list of projects is: PICASSO, TWIST, TJNAF, KOPIO, HERMES, DRAGON, and CDF.

The review will focus on the specific proposals submitted by the applicants. The set of questions prepared by the GSC that you must address at the review can be found below. In addition, we hope that the spokesperson for each project can provide any late-breaking information not included in the application that would be of relevance to the GSC in its review of the project. This should include any noteworthy progress and results since the time of submission of the application.

The review will consist of a presentation by each spokesperson, allowing sufficient time for questions by GSC members. Although the presentations will be open to the public, questioning will be limited to GSC members. There is also the possibility that the proponents will be asked to participate in a closed session of questioning.

In addition to the specific questions related to your grant application(s), the GSC would appreciate if you could address the following issues as well:

i) If you have not done so, please provide an estimate of projected operating and equipment expenditures over the next five years.

ii) In the event that your application is not fully funded, indicate the priorities in your proposed budgets in terms of the scientific return on Canada's investment.

iii) Also, indicate the future opportunities that may arise in terms of new initiatives.

iv) Comment on your preference for the duration of the grant.

TWIST:

1. Give size and groups of the non-Canadian part of the collaboration, responsibilities and funding situation.

2. Update construction status.
    A. What are the risks involved with using DME? What would be the loss in performance in using a CO2 based gas?
    B. What is the status of the magnet yoke machining?
    C. Will the magnet power supply feedback be on the currents or the magnetic field?
    D. Can TRIUMF provide a smaller 1AT1 target and are any other target modifications needed (you mention tailoring the shape)?

3. Funding:
    A. Estimate funding requirements beyond 2003.
    B. Explain the funding for 1999-2000 and 2000-2001 comparing the amount awarded with the amounts spent.

4. What are the expected yearly running times?

5. Upgrades:
    A. Compare anticipated TWIST precision with and w/o the hardware upgrades. What is the expected competition from other experiments?
    B. Describe the role of the TEC and the envisaged schedule.

6. Can the extremely small errors on the muon decay parameters be defended? In particular, could the systematic errors associated to detector efficiency and measurement bias be explained? Points to cover are:
    A. Momentum calibration in all directions in the spectrometer;
    B. Energy loss in material in different directions;
    C. Final state radiation;
    D. Efficiency as a function of angle and momentum.
    E. Give a comparison with existing measurements to explain how TWIST can do better.
    F. Explain clearly the argument that one global experiment can do better than the previous experiments which focused on particular parameters with a particular detector and technique.
        i. What is the correlation between the Michel parameters when they are extracted by a global fit and how do systematic errors affect the correlation?