

Dr. Piermaria Oddone, Director  
Fermi National Accelerator Laboratory  
P.O. Box 500  
Batavia, Illinois 60510

Dear Dr. Oddone:

The Office of High Energy Physics will conduct a peer review of Fermi National Accelerator Laboratory's (FNAL) research and development program on superconducting radiofrequency (SCRF) cavities and the development of the infrastructure need to carry out that program. The review will be held on February 13-14, 2007 at the laboratory.

The SCRF technology is an important element for future accelerators with proposed applications in elementary particle, nuclear, and condensed matter physics. The Department of Energy's (DOE) High Energy Physics program has served as the steward of accelerator technology for the United States and has a strong interest in the construction of the International Linear Collider (ILC) based on SCRF technology.

The SCRF technology is a capital intensive field where significant infrastructure is needed to conduct research and development. The materials used require extensive processing usually under controlled conditions that require clean rooms, high purity washing systems, precisely controlled ovens, and advanced surface treatments. Once devices are fabricated they must be tested using cryogenic systems and RF power systems, and sometimes with particle beams. The cost to acquire necessary infrastructure could be significant.

Fermilab is formulating a plan, which includes a significant investment in infrastructure, to carry out a research program on SCRF technology. The goal of this research program is to benefit a variety of future accelerator facilities and to further advance U.S. competitiveness in SCRF technology compared to other parts of the world. We will ask the peer reviewers to evaluate the scientific merit of the laboratory's overall SCRF research program as well as the technical merit and cost effectiveness of the laboratory's SCRF infrastructure development plan. In particular, we will request answers to the following:

1. What are the key R&D issues faced by the U.S. accelerator community in the area of SCRF?
2. What is the scope of facilities required at FNAL to address these key issues including those questions key to the success of the ILC?
3. Will the laboratory SCRF infrastructure started in FY06 and planned for FY07 and beyond be adequate to address these key issues, and on what time scale. Are the proposed solutions cost effective?
4. Does the laboratory make effective use of collaboration and existing SCRF

assets at other laboratories and universities?

5. Does the SCRF plan for FY08 and beyond make use of and develop U.S. industry at an appropriate level?

6. Is the FNAL SCRF plan configured and prioritized in a such a way that it can be sensibly scaled back should all of the requested funds not be available?

The contact person for this review in the Office of High Energy Physics is Michael Procario, [michael.procario@science.doe.gov](mailto:michael.procario@science.doe.gov). The membership of the review committee will be forwarded to you separately as soon as it is finalized.

Sincerely,

Robin Staffin  
Associate Director  
Office of High Energy Physics

cc: Joanna Livengood, FSO

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