

November 21 , 2002

Dr. Kevin Kahn  
Kahn's address

Dear Dr. Kahn:

This letter is submitted in response to the report of the Committee of Visitors (COV) for the Division of Electrical and Communications Systems (ECS) of the Directorate for Engineering (ENG). The COV report was presented and reviewed at the October 17-18, 2002 meeting of the Engineering Advisory Committee (ADCOM).

I wish to thank Dr. April Brown, Chair of the ECS COV Committee, and the members of the Committee for a thorough and thoughtful analysis of the ECS programs. I am pleased that the Committee found that the Division is meeting its stated goals and objectives, and doing that extremely well. Dr. Vasundara Varadan, Division Director for ECS, and I are giving full attention to the Committee's recommendations.

The Committee identified the following improvement areas, process issues, findings and recommendations.

1. Enhance the impact of program outcomes.
2. Enhance the support of innovative projects.
3. Develop and sustain a broad base of knowledgeable reviewers and improve documentation and the understanding of the NSF Review Criteria.
4. Improve the understanding and use of NSF Review Criterion 2.

The following responses are provided for these issues:

1. The COV identified two areas of concern.

One is related to the ECS budget and the COV report states that although the program structure is good and ECS PDs have been able to launch new initiatives by partnering with other agencies, the ECS budget is inadequate to sustain the level of effort needed to advance the frontiers of research in several of the emerging areas of interest. The ENG and ECS will make a strong case for increased ECS budgets based on reauthorization. Hopefully the newly passed NSF Authorization Act of 2002 doubling the NSF budget over a 5 year period will provide some relief.

The second issue is related to post award tracking of the ECS portfolio. The ECS division has initiated new procedures for FY'03 which are expected to provide some post award monitoring. In addition to requiring annual and final reports from our PIs, beginning in FY'03 we will request the following additional information:

- (a) Highlights of research outcomes elaborated by attractive graphics (suitable for our annual report and other publicity); journal and conference publications; conference and other presentations; patents applied for or awarded; industrial collaboration; and recognitions and awards related to the NSF grant.
- (b) Information on graduate students supported on the grant including name, thesis title, degree sought, graduation or expected graduation date, employment or prospective employment if known, and if possible gender and race information, citizenship status of the students.
- (c) Outreach activities such as involvement of undergraduate students, REU supplements and information on UG students thus supported, RET supplements and impact if any on K-12 curricula, impact of grant on undergraduate and graduate curriculum development and outreach to public at large.

Several ECS Program Directors (PD) organize grantees meetings at which Principal Investigators (PIs) have an opportunity to present the outcomes from their grant. Such meetings are very useful for post award monitoring and they will be continued. We feel that collecting the above information and holding of grantees meetings will provide a good picture of outcomes.

2. In FY'02, ECS funded 12 Small Grant for Exploratory Research (SGER) awards for a total investment of \$751k. Beginning in FY'03, the ECS Division Director (DD) has recommended that each PD should fund not less than 3 SGER awards. This will more than double ECS investments in innovative research awards while being mindful of the 5% cap on the non-competitive award total for the division.

ECS has recently partnered with the Semiconductor Research Corporation (SRC) to launch a new initiative titled 'Beyond CMOS' for the awarding of SGERs. It is interesting to note that House Bill 107-740 Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Bill, 2003 recommends – "From within the Engineering Directorate, the Committee is concerned that researchers are reaching the physical limits of current complementary metal oxide semiconductor (CMOS) process technology and that this will have significant implications for continued productivity growth in the information economy. The Committee encourages NSF to examine the challenges and timelines outlined in the most recent International Technology Roadmap for Semiconductors and, where feasible, increase research support in this area accordingly."

3. Beginning in FY'03 new ECS procedures have been instituted to collect information on panel composition for each PD as well as for the ECS division. The first such competition for which we have collected information is for the

FY'03 CAREER program. The information pertains to gender, race, institution (4 year, HBCU, HACU, EPSCOR state, major research institution), whether current or former ECS grantee, whether a new panelist, whether from another government agency or industry. Discussion of this information after each competition will not only enable PDs to have a look at the diversity of the panelists but also better appreciate the value of diversity. We expect improvements to the panelist selection procedure from its current status.

4. In order to increase understanding and use of the Broad Impacts Criterion (BIC) by PIs, panelists and PDs, several steps have been initiated at the foundation, directorate and division level. All ECS PDs participated in a directorate wide meeting on the BIC. New procedures have been developed for the conduct of panel reviews so that that all reviewers substantially address the BIC in the reviews they enter into Fastlane. PDs will follow up with reviewers so that proposal reviews are submitted prior to coming to NSF as a panelist. PDs will take care that equal time is devoted during discussion of each proposal and that the panel summary explicitly addresses the BIC in arriving at a recommendation. Finally, a new template has been developed for the Context & Analysis statement (Form 7) used by PDs to justify their award or declination decision. This will ensure that both the panel and the PD explicitly address and take into account the BIC in their decision. It has also been recommended that each PD should facilitate a workshop or discussion session at a major professional society meeting that they normally attend to further explain to the community the rationale for the BIC and the new NSF policy. The ECS DD also emphasizes the importance of BIC while welcoming panels and at conferences when she makes presentations on NSF programs. We hope that these efforts will bear fruit and address the genuine concern of the COV that only 65% of panelists and ECS PDs address the BIC in their written recommendations.

On behalf of the Foundation, I thank the members of the ECS COV for their efforts in helping us to maintain a high standard of service to the engineering research and education community, and to be more responsive to the needs of that community and the nation.

Sincerely,

Esin Gulari  
Acting Assistant Director for Engineering

Enclosures

Copy to:  
Director, NSF

Inspector General, NSF  
Chief Operating Officer, NSF  
Chief Financial Officer, NSF  
Chief Information Officer, NSF  
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Members, Committee of Visitors  
NSF Committee Management Officer, HRM  
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