

November 22, 2002

**MEMORANDUM TO NATIONAL SCIENCE BOARD MEMBERS**

**SUBJECT:** Preliminary Report of the November 20, 21, 2002 NSB Meeting

The major actions of the Board at its 371st meeting on November 20, 21, are summarized for the information of those members absent and as a reminder to those present.

**1. Board Actions**

- a. The Board approved a Revision to the National Science Foundation Cost Sharing Policy, (NSB-02-188, attached)
- b. The Board approved the NSF Management Response to the Inspector General's Semiannual Report
- c. The Board approved a Resolution on Guidelines for Setting Priorities for Major Research Facilities (NSB-02-189, attached)
- d. The Board approved *Science and Engineering Infrastructure: The Role of the National Science Foundation*, (NSB-02-190), for Web posting and public comment
- e. The Board approved a donation level for the Fiscal Year 2003 NSF Trust Fund
- f. The Board approved a one-day retreat in the Washington metropolitan area for Friday, February 7, 2003

**2. Awards**

The Board approved the following award:

Amount not  
to exceed

**GEOSCIENCES**

Division of Ocean Sciences

Request for Proposals and Award of a Contract  
for Support of United States Participation  
in the Integrated Ocean Drilling Program  
NSB-02-169

\$619,200,000  
Ten Years

### **3. NSB Committees**

(Committee summaries are provided by executive secretaries)

The Chairman discharged with thanks the Task Force on the Digital Opportunity Investment Trust.

#### **a. Executive Committee (EC)**

Dr. Colwell discussed the status of the recruitment for the Deputy Director, Large Facility Projects, indicating that a list of candidates has been compiled and the review process is underway. She reviewed changes to NSF's congressional oversight committees as a result of the recent elections and expressed her appreciation to the Congress for such strong support for NSF as is found in the FY 03 authorization bill. She also summarized the provisions of the authorization bill.

She presented information on the Foundation's research portfolio illustrating single investigator and multiple-investigator projects. The committee found the material extremely useful and asked that it be posted on the Foundation's web site.

Dr. Washington delivered his report, and re-emphasized his commitment to opening the Board's meetings to the maximum extent possible. He noted the provisions in the authorization bill that relate to this matter and indicated his wish to be fully responsive to them. Other items included in his report related to the need to discuss the NSB Trust Fund with the full Board; the 2003 retreat plans and agenda; and welcoming individuals newly nominated for Board membership.

#### **b. Audit and Oversight (A&O)**

##### **Regular**

Dr. Boesz presented the OIG Semiannual Report and Dr. Umminger provided the NSF Management Response to same. Dr. Umminger shared copies of the draft Congressional transmittal letter for the OIG semi-annual report. The Committee voted to recommend that the full Board approve the letter.

The committee heard an update on cost sharing and recommended a resolution (NSB/A&O-02-28) to the full Board. Drs. Noonan and Meyers came as guests and gave a briefing on the inaugural meeting of the NSF Advisory Committee for GPRA Performance Assessment. The committee also heard NSF staff presentations on NSF external audit resolution processes, the impact of OMB policy changes on interagency funding operations by NSF, and the Federal Managers Financial Integrity Act FY2002 review cycle.

## **Supervisory**

The committee heard presentations on how OIG pursues civil and criminal investigations, with details of actual cases cited as examples; on outstanding issues that remain from the last management letter report; and a progress report on the development of a new internal management information system.

### **c. Programs and Plans (CPP)**

The committee considered the draft report from the CPP Infrastructure Task Force. CPP recommended that the draft report be forwarded to the full NSB for approval. The report will be posted on the NSB Web site for 30 days of public comment. A report was also provided by the Polar Issues Subcommittee.

The committee considered and approved the action item, “a Request For Proposal (RFP) for Proposals and Award of a Contract for Support of U.S. Participation in the International Ocean Drilling Program” (NSB/CPP-02-169).

CPP considered a recommendation from the CSB for a revision of the NSB policy on “Guidelines for Setting Priority for Major Research Facilities” (NSB-01-204). A joint resolution from the two NSB committees, CPP & CSB, was forwarded to the full NSB for approval (NSB-02-189), stating that the NSB will approve facility construction projects by rank order, with the intent of making funding available according to that order.

The Committee also heard several reports:

- on the formation of University NAVSTAR Consortium (UNAVCO), Inc.;
- on the effects of the South American Financial Crisis on Gemini Funding and the scientific community involved in its use;
- a presentation on developing cost estimates for operations of large facilities; and
- an update on NSF actions following the NSB Environment Report.

### **d. CPP Task Force on Polar Issues (PI)**

Office of Polar Programs staff reported on the status of airplanes to be used in South Pole Station modernization; the history of and recent developments in designing the planned Alaska regional research vessel; research results on retreating Alaskan glaciers; and a new swath bathymetry system that will allow scientists to study ocean floor structures and historical evidence of ice sheet movement in the Antarctic. There was also a video showing of *Under Antarctic Ice*, a film by Norbert Wu.

#### **e. CPP Task Force on S&E Infrastructure (INF)**

The Task Force reviewed a revised draft of the INF report that incorporated recent comments from NSB members and NSF senior staff. A number of editorial changes were suggested, including a complete rewording of recommendation three, dealing with education and training at major facilities.

INF members then approved the following plan of action:

- Present the INF report to CPP, recommending approval as an "interim report" subject to further editorial refinements. Upon CPP approval, seek NSB approval as an "interim report" to be posted on NSB website.
- Post on NSB website for a 30-day public comment period. Develop and implement an outreach plan for obtaining comments from interested parties.
- Hold a conference call among NSB members to discuss/incorporate public comments
- Draft final version that (1) includes a variety of photographs and illustrations of NSF-supported infrastructure projects, and (2) reflects input of a professional editor.
- Approve final-final version at February NSB meeting.
- Publish printed report and also post on web
- Disseminate report and monitor community reaction. (NSB should develop the outreach/publicity strategy.)

#### **f. Education and Human Resources (EHR)**

Dr. James Lightbourne, EHR, provided a progress report on the activities of NSF's internal working group on the Workforce for the 21<sup>st</sup> Century Priority Area. He asked members questions, drawing on their experiences working with the STEM workforce at all levels, about the attitudes of students, and on the changing nature of scientific investigations--which are becoming more interdisciplinary, more diverse, and more frequently involve larger collaborations. He said that accomplishing the goals of the Workforce for the 21<sup>st</sup> Century priority area will require research on the workforce, programs that impact faculty, promotion of institutional collaborations and integration of research and education.

Dr. Margaret Leinen made a presentation on education and diversity activities in the Geosciences Directorate. She described a variety of NSF-wide and Directorate initiatives and programs being undertaken to increase student exposure and diversity in the Geosciences. Dr. Judith Ramaley made a presentation on EHR goals for the STEM workforce and the strategies being employed to meet these goals. Dr. Ramaley will complete her presentation at the February meeting.

The committee also heard reports from the Subcommittee on Science and Engineering Indicators and from the Task Force on National Workforce Policies.

#### **g. EHR Subcommittee on Science and Engineering Indicators (SEI)**

The subcommittee approved a thematic outline for the chapter on K-12 education and urged that a table of state-by-state teachers' salaries be included. SRS indicated that state-by-state tables would be included to the extent that data are available. SRS presented an update on the status of the new chapter on State S&E, and described current work to design an innovative map-based Web site for the State chapter.

SRS presented a schedule for review and approval of the 2004 Indicators volume. The Chairman stressed the need for all NSB members to be involved as reviewers. NSB reviewers will be recruited at the February 2003 meeting, with assignments to be finalized at the March meeting. Members asked SRS and the NSB Office to contact all members about the media format they prefer for receiving review materials.

In response to a question raised at the October meeting, SRS described the treatment of the federal science and technology budget and related concepts in Indicators since 1998, and confirmed that the 2004 Indicators volume will contain a similar explanatory sidebar.

The subcommittee discussed data on S&T teachers in Indicators and the forthcoming NWP report. SRS reported plans to improve its data on S&E teachers as part of the upcoming expanded S&E workforce data collections, and said that for the 2004 volume data on teachers will be drawn from a recently released National Center for Education Statistics survey. The topic of the S&E workforce was suggested as a possible topic for the 2004 companion piece, and the chairman agreed to discuss a joint effort with the chairman of NWP.

Finally, SRS described the plan for a study of recent trends in publication of journal articles by U.S. scientists and engineers. The study will be a careful effort to understand the magnitude and origin of changes in the publication output of U.S. S&E, involving an advisory panel and allowing SRS to calibrate publication data as an important indicator of S&E activity.

#### **h. EHR Task Force on National Workforce Policies for S&E (NWP)**

The meeting of the task force was a working session on a draft of the report. The report will call for mobilizing all stakeholders in the development of the domestic workforce in science and engineering. The challenge faced by U.S. science and engineering is increased dependence on foreign-born students and workers at a time when both international competition for scientific talent and national security concerns are growing.

This is coupled to underdevelopment of our domestic human resources, particularly of underrepresented minorities, who are a growing proportion of our student-age population. The Task Force plans to forward a completed report to the EHR Committee for discussion at the February Board meeting.

## **i. Committee on Strategy and Budget (CSB)**

CSB continued discussions initiated at the October meeting on options for changing the NSB's policies for priority setting for large facilities projects, on how the Foundation might change the way it defines large research facilities projects, and on how appropriations accounts are used to fund these facilities.

The committee voted to recommend that the NSB approve changes to the NSB's November 15, 2001 policy entitled "Guidelines for Priority Setting for Major Research Facilities." The principal change is that the Board will rank-order NSB-approved facility construction projects with the intent that funding will be made available to projects in accordance with the order determined by the Board.

Dr. Bordogna led a discussion of how the NSB and NSF could encourage the support of new mid-size facilities through the Foundation's Research and Related Activities (R&RA) account. Dr. Ferguson reported that CSB strongly believes that NSF's R&RA Account, as well as its Major Research Equipment and Facilities Construction Account, should both be used to support facilities construction projects and that CSB discussed whether the NSB should establish a policy statement to express this position. There was agreement that NSF and the CSB, along with the Committee on Programs and Plans, should develop such a policy statement for consideration at the next NSB meeting.

Dr. Bordogna briefed the committee on NSF's ongoing efforts to revise the Foundation's GPRA Strategic Plan. The Deputy Director directed the committee's attention to government-wide performance and accountability requirements, as well as the President's science agenda, which the Foundation needs to keep in mind as the revised strategic plan is developed. Dr. Bordogna provided a draft outline for what the revised strategic plan might look like and a set of S&T strategic drivers that might serve as the framework for the plan. The revised plan will be further reviewed by CSB at the February NSB meeting.

CSB briefly continued a review of recently issued NSB reports to determine to what extent the recommendations have been implemented. Dr. Ferguson reported that the next CSB meeting would include a discussion on assessment tools that might be employed in connection with NSB-issued reports.

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Gerard Glaser  
Acting Executive Officer

Attachment 1: [NSB-02-188](#), National Science Foundation Cost Sharing Policy Revision  
Attachment 2: [NSB-02-189](#), Guidelines for Setting Priority for Major Research Facilities

November 21, 2002

RESOLUTION

NATIONAL SCIENCE BOARD

NATIONAL SCIENCE FOUNDATION  
COST SHARING POLICY REVISION

RESOLVED, that the National Science Board approves the proposed revision to the National Science Foundation's cost sharing policy (NSB 99-92) as recommended by the Audit and Oversight Committee, as follows:

That the third paragraph of the section in the policy entitled "Budget Negotiations" be deleted and replaced with the following: "In budget negotiations, any reduction of 10% or more from the amount proposed should be accompanied by a corresponding reduction in the scope of the project."

Dr. Mark S. Wrighton  
Chair, Committee on Audit and Oversight

**RESOLUTION**

**NATIONAL SCIENCE BOARD**

**Guidelines for  
Setting Priority for Major Research Facilities**

The Committee on Strategy and Budget and the Committee on Programs and Plans recommend that the National Science Board approve revision to the Board's November 15, 2001 "Guidelines for Setting Priority for Major Research Facilities" in accordance with the following resolution:

**RESOLVED, that the National Science Board approves the attached revision to NSB-01-204, entitled "Guidelines for Setting Priority for Major Research Facilities," and dated November 15, 2001, as recommended by the Committee on Strategy and Budget and the Committee on Programs and Plans.**

**Maxine Savitz  
Chair, Committee on Strategy and Budget**

**Anita K. Jones  
Chair, Committee on Programs and Plans**

**Attachment:**

**NSB-02-191**

**National Science Board**  
**Guidelines for**  
**Setting Priority for Major Research Facilities**

The advancement of research and education in all fields of science and engineering depends – at some times – on equipment that permits observation and experimentation. Therefore, the National Science Foundation (NSF) funds such equipment. It also funds the research necessary to advance the engineering of next generation instruments that may enable entirely new and improved modalities of observation and experimentation.

Some of the equipment that enables the advancement of research is large, complex, and costly. The term *facility* is used to describe such equipment, because typically the equipment requires special sites or buildings to house it and a dedicated staff to effectively maintain and use the equipment. Multiple experimental researchers working in related disciplines share the use of such large facilities.

From time to time, a consensus arises within a research community that a particular new facility is required to advance the state of knowledge in the field. Such a consensus matures through broad community discussion. Through that discussion, a consortium sometimes arises from the community to take the responsibility to build and operate the facility for the good of the entire community. In all cases there are clearly stated research questions that only the unique, envisioned facility could help answer.

The National Science Board approves all large facility projects, as directed by the NSF Act of 1950 and based on the Board's revised delegation of authority to the Director (NSB-99-198, Appendix B, "Delegation of Authority," 335 NSB Meeting, November 18, 1999). When considering a facility project for approval, the Board reviews the need for such a facility, the research that will be enabled, readiness of plans for construction and operation, construction budget estimates, and operations budget estimates. Construction of many facilities is funded through the NSF Major Research Equipment and Facilities Construction account.

Due to cost, not all facilities can be built at the time that their need is determined and plans are in order for construction. Consequently, the Board will order facility construction projects with the intent that funding be made available to projects in this rank order. If it becomes necessary, the Board will reconsider both individual project approval and project priority.

The guidelines observed by the Board in approving and prioritizing such major facility projects and in approving the NSF budget submission are:

- Once construction for an approved and prioritized project commences, highest priority is given to moving that project forward through multiple years of construction in a cost-effective way, as determined by sound engineering and as long as progress is appropriate. It is most cost-effective to complete initiated projects in a timely way, rather than to commence new projects at the cost of stretching out in-progress construction.
- New candidate projects will be considered from the point of view of broadly serving the many disciplines supported by NSF.
- Multiple projects for a single discipline, or for closely related disciplines, will be ordered based on a judgment of the contribution that they will make toward the advancement of research in those related fields. Community judgment on this matter is considered.
- Projects will be authorized close to the time that funding requests are expected to be made.
- International and interagency commitments are considered in setting priorities among projects.

The above are guidelines. Each facility consideration involves many complex issues. The Board will consider all relevant matters, and could deviate from these guidelines, given sound reasons to do so.