NSB-01-174

October 15, 2001

**MEMORANDUM TO NATIONAL SCIENCE BOARD MEMBERS**

**SUBJECT:** Preliminary Report of October 10, 11, 2001 Meeting

The major actions of the Board at its 365th meeting on October 10, 11, 2001, are summarized for the information of those members and consultants absent and as a reminder to those present.

## 1. Board Actions

a. The Board approved a resolution (NSB-01-167, attached) on the importance of the Merit Review Criterion on "Broader Impacts."

b. The Board confirmed the dates of the March, 2002 meeting; Wednesday and Thursday, March 13 and 14. The Board Office will poll members at a later time about possible dates for an annual retreat.

c. The Board approved a resolution (NSB-01-177, attached) transmitting *Science and Engineering Indicators – 2002* to the White House.

d. The Board approved the report *Federal Research Resources: A Process for Setting Priorities* (NSB-01-156) for printing and distribution.

e. The Board approved a resolution (NSB-01-180, attached) affirming its priorities for the MRE account.

f. The Chairman established a Committee on the 2002 Vannevar Bush Award, Chaired by Dr. Langford, with members Drs. Rossmann, Rubin and Savitz.

## 2. NSB Committees

(Committee summaries are provided by executive secretaries.)

### b. Executive Committee (EC)

The Executive Committee received a congressional and budget update from the Director, and endorsed retention of the March 13-14, 2002 dates for the March NSB meeting. The Executive Committee will meet in the intervening time from November 2001 to March 2002, as needed. The committee also heard a report from the NSB Chair on the establishment of a new Vannevar Bush committee.

**c. Audit & Oversight (A&O)**

**Regular**

Dr. Colwell discussed NSF's efforts to develop an action plan addressing the top ten "Management Challenges" that face the agency. She also noted NSF's role in helping to address concerns emerging out of September 11's events. Mr. Hastings provided an update on the steps completed and underway on the Gemini Audit Corrective Action Plan. Dr. Colwell noted the scientific success of the Gemini Telescopes.

**Supervisory**

The received an update on the status of an investigation and two recently initiated audits. The committee also received copies of recent IG testimony.

**d. Programs and Plans (CPP)**

The Committee on Programs and Plans, with the Committee on Education and Human Resources invited, discussed the Foundation's two merit review criteria. NSF staff reported on actions taken after implementation of the two new criteria in FY 1998, and on continued plans to raise awareness of the broader impacts criterion. The committee suggested edits to draft language in the Grants Proposal Guide to clarify that one or more of the descriptive sub elements must be addressed (not necessarily all of them.) The committee also noted possible difficulties associated with proposal page limits, as an issue to be addressed by NSF management.

CPP heard reports on management and oversight of the Large Hadron Collider from Dr. Marvin Goldberg, NSF Program Director and Dr. William Willis, Project Manager for the U.S. ATLAS collaboration. Potential funding difficulties at CERN were also noted.

The committee discussed setting priorities for MRE projects, with Dr. Anita Jones participating by telephone to report points brought forward from the Committee on Strategy and Budget (CSB). Members agreed to hold further discussion in November with the CSB on the process and timing for Board review and approval of MRE projects. The CPP recommended to the full Board a resolution stating that the Board's highest MRE priorities presented in the budget are ALMA Phase II, EarthScope and NEON (listed alphabetically.)

The committee received a brief update on ongoing discussions within the Gemini project regarding plans for partners to assume the Chilean share of the project, apart from the observing share that Chile maintains as the host country. The committee also heard an update on activities related to the NSB Environment Report, describing results of the FY 2001 competition for Biocomplexity in the Environment (BE), topical areas for BE in FY 2002, plans for a meeting of BE awardees, and activities of the Advisory Committee on Environmental Research and Education.

The committee heard a brief summary of the recent NSF workshop on best practices for large facility projects management and oversight, and the Infrastructure Task Force and the Polar Issues Subcommittee reported on their meetings

**e. CPP Subcommittee on Polar Issues (PI)**

The subcommittee received an update from Office of Polar Programs staff on several items including: Election of Tom Pyle as Chairman of the intergovernmental Arctic Ocean Sciences Board; the working group of SEARCH (Study of Environmental Arctic Change) recommendations for interagency research activities for the next 5 - 10 years; Dr. Erb's recent meeting with the Assistant Secretary of the Air Force regarding DOD support for the Antarctic program; the beginning of the Antarctic season ceremonies in New Zealand; submission of a budget request to OMB to cover new security standards and requirements; information on a report on additional costs to South Pole Modernization and operations from last year that will be submitted to the NSB in November; and a readiness review of the ICECUBE project. The subcommittee was informed that plans for another communication satellite have been put on hold.

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

The task force agreed to develop a first draft report by the March 2002 Board meeting, and to submit its final report to the NSB between May and August 2002. The November INF meeting will be devoted to obtaining additional information and testimony needed to write the first draft. Possible presenters at the November meeting are Dan Atkins, Chair of the Advisory Committee for Cyber-infrastructure; representatives from OMB; and representatives from other science-oriented agencies, such as DOE and NASA.

The task force also approved a draft Table of Contents for the report, subject to increased emphasis in several areas, such as international partnerships; education and human resources; management and oversight; and instrumentation research and development. In addition, INF members reviewed an analysis of directorate infrastructure reports and additional data on infrastructure funding. It was agreed that NSF should ask the directorates to update and clarify the information in their reports.

**g. Education and Human Resources (EHR)**

The EHR Committee was briefed on the current plans and activities of NSF's Committee on Equal Opportunities in Science and Engineering (CEOSE) by Dr. Suzanne Brainard of the University of Washington and Dr. Willie Pearson, Jr. of Georgia Tech, the chair and vice-chair of CEOSE, respectively. Dr. Brainard reviewed the recommendations from the 2000 CEOSE report and discussed the need to ensure that appropriate measures are employed to evaluate activities and that new activities are guided by research results.

Dr. Judith Ramaley and Dr. Norman Fortenberry gave an overview of NSF's current programs and activities in support of diversity and areas that are in need of more attention. Dr. Ramaley reported she has established an internal NSF Diversity Working Group, consisting of staff members from all the directorates, to look at diversity issues from an NSF-wide perspective.

The committee asked to be briefed in more detail on NSF's diversity activities, including assessments of their efficacy, at future meetings.

The committee reviewed the latest draft of the report "*The Road to Excellence: The National Science Foundation's Leadership in K-16 Science, Mathematics, Engineering, and Technology Education*." There was considerable discussion about the scope and structure of the report in keeping with the intent to have it serve as guidance for the EHR Committee rather than developing it into a policy statement. The document should be completed before the November meeting.

The Committee also heard reports from the Indicators Subcommittee and the Task Force on National Workforce Policies for Science and Engineering and approved *Indicators 2002* for publication. Finally, Dr. Ramaley gave a brief update on the status of the Math and Science Partnerships Initiative, including pending legislation and NSF's current planning for this activity.

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

Mr. Rolf Lehming briefed the subcommittee on federal agency comments received on the Orange Book and the chapter authors' responses to them. The subcommittee reviewed the draft NSB resolution concerning publication of *Science and Engineering Indicators*-2002 and recommended final approval of the Orange Book to the full Board. Mr. Lehming mentioned the delay in getting data released from the National Center for Education Statistics for inclusion in *Indicators-2002.* The subcommittee agreed that a statement will be included in the printed document explaining that the data will be released at a later date, and providing a URL where readers will be able to find the full analysis and tabulations when the data are released. Mr. Lehming updated the subcommittee on the feasibility of including a chapter on the environment in *Science and Engineering Indicators-2004.* Subcommittee members supported the proposed plan and suggested that SRS contact Board members and relevant federal agencies for input.

Dr. Cehelsky led a discussion on a possible companion piece for *Indicators-2002*, recapping the discussion on this topic at the August meeting. The subcommittee concurred with Dr. Richardson's suggestion that the topic should be *Science in Support of National Security.* Dr. Tapia will consult with subcommittee members and staff in the next week to discuss the feasibility of producing the companion piece considering time and date constraints.

Dr. Tapia mentioned the letter received from Dr. Greenwood regarding the need to focus attention on the science and mathematics teacher workforce, especially issues of teacher preparation. SRS is addressing some of these comments and suggestions in *Indicators-2002* and will do more in *Indicators-2004.*

### i. EHR Subcommittee on National Workforce Policies for S&E (NWP)

The Task Force discussed the draft Report Framework, which was extensively revised after the August meeting. The draft draws heavily on *Science and Engineering Indicators - 2002* as the data source behind its findings, and in that regard will be a policy piece building on the 2002 Indicators.

Data show a growing U.S. reliance on foreign-born students and workers, concurrent with a failure to develop sufficient domestic human resources in science and engineering relative to many competitor countries and relative to demand for workers by U.S. employers. Thus, the task force agreed on the keystone finding that for the United States to maintain a fundamentally strong position in science and engineering in the future, we must develop our domestic human resources at a greater level than is currently being accomplished.

The task force discussed the challenges the U.S. faces in order to enhance the domestic workforce in science and engineering. Members will continue working toward a report that offers specific recommendations.

### j. Task Force on International Issues in S&E (ISE)

The meeting focused on review of the consolidated final report. Dr. Natalicio reminded participants that during the September 21st teleconference task force members agreed that the report must recognize the events of September 11. Therefore, a short stand-alone section was added that points out that, although the report's recommendations remain unchanged, given the events of September 11 the implementation of these recommendations is even more compelling.

The task force agreed that the report needs only a few minor revisions before it is ready for distribution. Participants also agreed that current circumstances increase the urgency of finalizing and distributing the report. Once the minor revisions are made, the draft will be distributed simultaneously to the full Board and to the participants in the task force's deliberations. Comments will be requested before the November NSB meeting so a revised version of the document, incorporating comments from Board members and others, will be available for full Board discussion and final approval at the November meeting.

### k. Committee on Strategic S&E Policy Issues (SPI)

The Committee approved recommendation of its final report, *Federal Research Resources: A Process for Setting Priorities* (NSB 01-156), to the full Board for approval, and discussed next steps for distribution of the report.

### l. Committee on Strategy and Budget (CSB)

Dr. Warren Washington, on behalf of Dr. Anita Jones, Chair of the CSB, reported that the committee discussed what the committee's annual cycle should be in order to 1) evaluate strategic budget issues, 2) propose guidance on NSB priorities, and 3) evaluate the NSF budget in terms of its support for NSB strategies. In collaboration with the Committee on Programs and

Plans, the committee discussed possible changes in the policies and procedures used by NSB in approving new large facility projects. NSF staff provided an update on the status of two surveys being conducted to assess the adequacy of funding and duration of support provided under NSF research grants. NSF's Deputy Director provided an overview of the dynamics of NSF's core activities and related priority areas. The committee was briefed by NSF's Director on the status of NSF's FY2002 and FY2003 budget submissions.

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Marta Cehelsky
Executive Officer

Attachment 1: NSB-01-167
Attachment 2: NSB-01-177
Attachment 3: NSB-01-180

Attachment 1 to NSB-01-174
NSB-01-167

October 12, 2001

**RESOLUTION APPROVED BY THE NATIONAL SCIENCE BOARD**

**AT ITS 365TH MEETING ON OCTOBER 11, 2001**

**The Board approved the following resolution on Merit Review Criteria.**

Competitive merit review underlies the National Science Foundation's decision-making process for funding research and education projects. Two general merit review criteria, implemented in FY 1998 following recommendations of a National Science Board Task Force, address the intellectual merit and the broader impacts of a proposed activity. The use of both merit review criteria, throughout the merit review process, promotes investments in the best ideas coupled with attention to wider benefits for the science and engineering enterprise, and for society. Such investments support the Foundation's strategic vision for enabling the Nation's future through discovery, learning and innovation.

> Therefore, be it RESOLVED that the National Science Board affirms the significance of both the intellectual merit and the broader impacts of projects supported by NSF, and endorses actions to raise awareness of the importance of both merit review criteria. These actions should include wide dissemination of generic examples of activities that address the broader impacts criterion, and amendments to policies and procedures for proposers, reviewers and NSF Program Managers on the use of both criteria in the proposal and award process.

Attachment 2 to NSB-01-174

NSB 01-177

RESOLUTION APPROVED BY THE NATIONAL SCIENCE BOARD AT ITS 365TH MEETING, OCTOBER 10-11, 2001 CONCERNING

PUBLICATION OF THE NATIONAL SCIENCE BOARD (NSB) SCIENCE AND ENGINEERING INDICATORS-2002 REPORT

WHEREAS the Board, has reviewed the draft of the NSB Science and Engineering Indicators-2002 Report

Now, therefore, be it RESOLVED that the National Science Board

APPROVES the publication of the report;

AUTHORIZES that the report be rendered to the President for submission to Congress; and

AUTHORIZES the Chairman of the Subcommittee on Science and Engineering Indicators of the Committee on Education and Human Resources and the Chairman of the Board, jointly, to approve such further reasonable modifications to the report as may be deemed necessary or desirable in view of review comments such as those of the Office of Science and Technology Policy, the Office of Management and Budget, and other Federal agencies as well as any additional comments by Board members or the addition of new or updated data and information.

Attachment 3 to NSB-01-174
NSB-01-180

**RESOLUTION ON MRE PRIORITIES**

**APPROVED BY THE NATIONAL SCIENCE BOARD**

**AT IT'S 365TH MEETING, ON OCTOBER 11, 2001**

The Board's highest MRE priorities presented in the budget are ALMA Phase II, EarthScope, and NEON.