

**APPROVED MINUTES¹
OPEN SESSION
369th MEETING
NATIONAL SCIENCE BOARD**

The National Science Foundation
Arlington, Virginia
August 15, 2002

Members Present:

Warren M. Washington, Chair
Diana Natalicio, Vice Chair
Nina V. Fedoroff
Pamela A. Ferguson
Anita K. Jones
George M. Langford
Joseph A. Miller, Jr.
Robert C. Richardson
Michael G. Rossmann
Maxine Savitz
Luis Sequeira
Daniel Simberloff
John A. White, Jr.
Mark S. Wrighton

[nine vacancies]

Rita R. Colwell, NSF Director

Consultants Present:

Mary K. Gaillard
Stanley V. Jaskolski
Bob H. Suzuki
Richard Tapia

Members Absent:

Jane Lubchenco

Consultants Absent:

M.R.C. Greenwood

¹ The minutes of the August 2002 meeting were approved by the Board at the October 2002 meeting.

The National Science Board (NSB) convened in Open Session at 3:00 p.m. on Thursday, August 15, 2002, with Dr. Warren M. Washington, Chair, presiding (Agenda NSB-02-110). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 6: Open Session Minutes, May 2002

The Board APPROVED the Open Session minutes of the May 2002 meeting (NSB-02-97, Board Book Tab G).

AGENDA ITEM 7: Closed Session Items for October 2002

The Board APPROVED the Closed Session items for the October 2002 Board Meeting (NSB-02-111, Board Book Tab H).

AGENDA ITEM 8: Chair's Report

a. Election Results

Dr. Washington reported that Dr. Anita Jones had been elected to the Executive Committee to fill the vacancy created when Dr. M.R.C. Greenwood's term on the Board expired. Dr. Jones's term will expire on May 10, 2003.

b. Committee Chairs

Dr. Washington announced new chairs of several committees:

- Audit and Oversight, Dr. Mark Wrighton
- Education and Human Resources, Dr. George Langford
- Science and Engineering Indicators, Dr. Robert Richardson
- Programs and Plans, Dr. Anita Jones
- Polar Issues, Dr. John White
- Strategy and Budget, Dr. Maxine Savitz

c. Discharge of NSB Nominating Committee

Dr. Washington discharged the NSB Nominating Committee, chaired by Dr. Langford, with members Drs. Savitz and Jane Lubchenco. Mr. Gerard Glaser, Senior Policy Officer, served as Executive Secretary, assisted by Ms. Susan Fannoney, Awards Coordinator.

d. Acting Executive Officer

Dr. Washington welcomed Mr. Glaser, Senior Policy Officer in the Board Office, as the acting Executive Officer and thanked him for assuming that responsibility.

e. MRE Photos

Dr. Washington called to the Board's attention the display of Major Research Equipment and Construction Facilities photos that had been put together for this Board meeting.

f. Senate Appropriation Language

Dr. Washington reported that two aspects of the Senate Appropriations Committee language had been discussed at the Executive Committee meeting: (1) that the Board receive its own appropriation for operations and staffing, and (2) that the position of Board Chair require a separate confirmation. Dr. Washington invited Board discussion on these proposals, noting that the full Senate and the House have not voted on the proposals.

Board members' comments focused on the importance of an interactive dialog with members and staff of relevant congressional committees, including the Senate Appropriations Committee; the need to understand the reasoning behind the Committee's proposals and to discuss the strengths and flexibility of current Board operations; the importance of the Board's independence from political influence; and the need for unimpeded access to NSF staff and information. After the Senate Committee's concerns have been identified, the Board will consider a written statement addressing the Committee's proposals and other appropriate concerns.

Dr. Washington stated that he would schedule discussions with appropriate people in Congress to determine what the issues are from the Senate perspective and to discuss funding concerns with both Senators and Representatives. He agreed to work with the NSF Director to develop talking points, which he will share with Board members before meeting with congressional leaders and staff.

g. Openness of NSB Meetings

Dr. Washington placed before the Board the issue of making Board meetings and committee meetings more open to the public under the terms of the Government in the Sunshine Act. He reported that he had been asked about openness during his first appearance before a Senate committee in May. In his subsequent written response to Senator Bond, he reaffirmed the Board's commitment to the Sunshine Act and stated four actions that he is taking. He has

- directed the acting Executive Officer and the General Counsel to work together to ensure that agenda items are properly allocated between open and closed sessions,
- encouraged Board committee chairs to provide more of the flavor and content of committee meetings when reporting in Open Session,
- encouraged committees to schedule public hearings when researching matters of general interest to obtain information from interested parties, and
- asked the General Counsel to report on the status of these efforts during the next fiscal year.

Dr. Washington invited Board discussion on the openness issue. Members noted that discussion of issues at Open Session would provide the public with more information about how the Board makes decisions and about national science policy issues. Dr. Washington stated that he would attempt to schedule the Open Session earlier in the day in order to reduce the potential conflict with Board members' travel schedules.

AGENDA ITEM 9: Director's Report

a. Staff Introductions

Dr. Rita Colwell, Director of the National Science Foundation (NSF), introduced recently appointed staff: Dr. Arthur Ellis, Division Director for Chemistry, Mathematical and Physical Sciences Directorate; Dr. Warren DeVries, Director of the Division of Design, Manufacture and Industrial Innovation, Engineering Directorate; and Dr. Donald Thompson, Director of the Division of Human Resource Development, Education and Human Resources Directorate.

b. NSF Awards

The Director reported that for the third consecutive year NSF had received the Association of Government Accountants Certificate of Excellence in Accountability Reporting. The award recognizes Federal agencies for financial soundness and for excellent preparation, issuance, and timeliness of accountability reports. This year NSF developed a user-friendly brochure of management and performance highlights to complement its formal report. The League of American Communications Professionals ranked the brochure fourth out of more than 600 entries in its annual report competition. Dr. Colwell thanked NSF staff who had produced the report and brochure.

c. Congressional Update

Dr. Colwell reported on congressional activity since the May Board meeting. On May 15, Dr. Colwell and Dr. Washington testified before the Senate Appropriations Subcommittee on VA/HUD and Independent Agencies, along with Dr. John Marburger, Director of the Office of Science and Technology Policy. The Subcommittee expressed its support for increased funding for NSF programs. The Director also testified on behalf of NSF's FY 2003 budget request before the Senate Commerce Subcommittee on Science, Technology and Space on May 22, and on June 19, before the Senate Health, Education, Labor and Pensions Committee. The latter hearing focused on science and math programs.

Dr. Colwell reported that the FY 2002 Supplemental Appropriations Bill, signed by the President on August 2, provides NSF with \$19.3 million for the Scholarships for Service Program, which is intended to increase the number of cyber security personnel.

On July 5, the House of Representatives passed H.R. 4664, the Investing In America's Future Act of 2002, a three-year reauthorization bill for NSF that provides increases in budget authority averaging 15 percent a year. On July 29, Senator Kennedy introduced a corresponding act, S. 2817, the National Science Foundation Doubling Act, which reauthorizes NSF for five years.

Other bills of particular interest include S. 2182, the Cyber Security Research and Development Act (companion bill to H.R. 3394), which was reported out of the Senate Commerce Committee on August 1, and which would provide NSF and the National Institute of Standards and Technology with grants to expand basic research in computer security; and H.R. 3130, the Technology Talent Act of 2001, which the House passed on July 9, and which would establish programs at NSF to expand the number of U.S. students majoring in science, math, engineering, and technology. Similar talent provisions have been incorporated into the Senate's reauthorization bill S. 2817 and also into a separate bill S. 1549.

The Senate Appropriations Committee reported out its version of the VA/HUD and Independent Agencies bill on July 25. The Committee allocated \$5.353 billion for NSF in FY 2003, which is an increase of \$564 million or 11.8 percent, over the FY 2002 appropriation.

AGENDA ITEM 10: Science Presentations

Because of the shortage of time, Dr. Washington, with the Director's concurrence, postponed the science presentations until the October meeting. Dr. Washington apologized to the presenters for this change.

ADENDA ITEM 11: Committee Reports

a. Audit and Oversight (A&O)

Dr. Wrighton, chair, reported that in its regular session, the committee heard several presentations:

- Mr. Thomas Cooley, Chief Financial Officer and Director of the Office of Budget, Finance and Award Management, presented NSF's response to the FY 2001 audit Management Letter.
- Mr. Brian Mannion, Senior Advisor in the Division of Grants and Agreements, discussed NSF's cost-sharing policy, audit concerns, and community concerns. The committee reaffirmed the Board policy set in 1999 and passed a motion requesting that NSF formulate and implement policies that have cost-sharing on awards only when required by statute or when there is a tangible benefit to the scientific enterprise.
- Dr. John (Jack) Lightbody, Executive Officer of the Physics Division, reported on the development of Guidelines and Procedures for Managing and Overseeing Large Facility Projects.

- Ms. Andrea Norris, Director of the Division of Information Systems, reported on the steps NSF has taken to achieve a balance between a culture of access and collaboration and the demands for a critical information technology security environment.
- Dr. Maryellen Cameron, Senior Advisor in the Budget Division, provided a list of the reports that NSF will develop within the next six months under the Government Performance and Results Act (GPRA). She also noted the formation of a new external advisory committee to assist NSF on performance assessment.
- Mr. Joseph Burt, Senior Staff Associate in the Office of Integrative Activities, reported on plans to advance administration and management, especially the development of a business analysis. A contract has been let to support NSF's long-term administration and management investment strategy.

In supervisory session, the committee reviewed the Office of Inspector General's budget request for FY 2004 and recommended it for approval by the full Board in Closed Session. The committee also heard presentations on plans for the FY 2003 audit, results of an investigation of a Small Business Innovation Research grant, issues related to patents developed from NSF-supported work, and pending legislation that would strengthen the law enforcement authority of inspectors general.

In addition, the committee met in executive session to review its work in connection with Board operations, especially looking at ways to enhance the importance and effectiveness of the Board's policy studies.

b. Education and Human Resources Committee (EHR)

Dr. Langford, chair, reported that the Task Force on National Workforce Policies for Science and Engineering had presented its preliminary recommendations for discussion, and he noted that the work of the task force fits with one of the on-going priority areas for NSF. The committee also received an update on Science and Engineering Indicators.

The committee received several briefings.

- Dr. Esin Gulari, acting Assistant Director for Engineering, described directorate strategies that emphasize building bridges between engineering faculties at all educational levels, efforts in joint career-enhancing activities, a joint activity with the Education and Human Resources (EHR) Directorate that supports collaboration between schools of engineering and schools of education, a new minority post-doctoral program, and programs to develop curricula to improve pedagogy in engineering schools.
- Dr. John Hunt, acting Assistant Director for Mathematics and Physical Sciences, discussed programs in Mathematics and Physical Sciences (MPS) that address education at many different levels. He mentioned vertical integration of research and education in the mathematical sciences and a program designed to increase the number of students who pursue careers in math.
- Dr. Judith Ramaley, Assistant Director for EHR, reported on the Workforce for the 21st Century priority area. Two long-term goals are to develop capacity to

prepare the next generation of scientists, mathematicians, and engineers; and to promote broad participation and achievement in science and engineering. The Interagency Education and Research Initiative is a joint effort among NSF, the Department of Education, and the National Institutes of Health to scale up interventions that have proven successful in pilot programs in K through 12 and involve reading, math, and science.

- Dr. Deborah Crawford, acting Deputy Assistant Director for EHR, described the status of math and science partnership competitions. More than 300 proposals were received in three categories, and the announcement of successful principal investigators will be announced soon. A new competition will be announced for next year.

c. EHR Subcommittee on Science and Engineering Indicators

Dr. Richardson, chair, reported that the subcommittee reviewed and approved the schedule for Science and Engineering Indicators 2004. After discussion, the subcommittee decided not to have separate chapters on information technology and the environment but instead to distribute those topics throughout the traditional chapters in the document, with a detailed index. There will be a new chapter on data for state-level science and engineering.

d. EHR Task Force on National Workforce Policy (NWP)

Dr. Joseph Miller, Jr., chair, reported that the task force discussed the draft framework for its report. The task force has conducted extensive information gathering, including workshops and literature reviews, and is synthesizing its findings and shaping its recommendations. The task force envisions a data-supported, strong statement to motivate change. The preliminary conclusion is that, if demand for scientists and engineers continues to increase as anticipated and response by domestic students continues to be weak, U.S. dependence on foreign-born workers will increase at a time when international competition for their services is increasing. The policy imperative is to develop a domestic workforce in science and engineering while continuing to compete globally for scientific and engineering talent. The task force is considering six areas of recommendation and anticipates having a report for Board review at the November meeting.

e. Committee on Programs and Plans (CPP)

Dr. Jones, chair, reported that the committee considered four proposed awards and recommended three for Board action: (1) South Pole Observations to Test Cosmological Models, \$17 million for 60 months; (2) a final year of data gathering and phase-out of management and operations of the Ocean Drilling Program, \$70 million for 60 months; and (3) authorization of construction of the Atacama Large Millimeter Array, \$332 million for 96 months. The committee also considered the Extensible Terascale Facility and has requested additional information from NSF staff before making a final decision on bringing the proposal before the Board.

The committee also discussed the draft report from the Infrastructure Task Force; heard from Deputy Director Joseph Bordogna about the process being used to set Major Research Equipment and Facilities Construction (MREFC) priorities and the planning for the guidance and request levels for the President's budget for FY 2004; received a progress report from Dr. Margaret Leinen, Assistant Director for Geosciences, on activities related to *Environmental Science and Engineering for the 21st Century*, especially the ten-year agenda being developed by the Advisory Committee; received information on the Monterrey Accelerated Research System, a cabled observatory that will serve as a test-bed for concepts and instruments for future larger, deeper cabled observatories; and heard a report from the Polar Issues Subcommittee.

The committee also talked about policy topics for future meetings, especially operations support for major facilities; experience in implementing the Board's 1997 policy on competition, recompetition and renewal of awards; and policy on setting priorities for major projects.

f. CPP Subcommittee on Polar Issues

Dr. White, chair, reported that the subcommittee received several presentations:

- Dr. Karl Erb, Director of Polar Programs, gave an update on activities at the South Pole, including a successful telemedicine application.
- Dr. Thomas Pyle, head of the Arctic Sciences Section, gave an update on the resolution of a potential conflict between NSF's research vessel and the whaling season near the Barrow area in Alaska.
- Dr. Simon Stephenson, Research Support and Logistics Manager in the Arctic Sciences Section, reported on an effort by the local government to create a centralized Barrow Arctic Research Center, involving National Oceanic and Atmospheric Administration, the Department of Defense, and NSF. NSF has a minimalist presence in Barrow and does not support a centralized center.
- Dr. Lightbody gave an update on IceCube.
- Dr. Deneb Karentz, Biology and Medicine Associate Program Manager, Antarctic Sciences Section, gave a report on the tremendous opportunity to study plant and animal life at the South Pole during the winter months.
- Dr. Dennis Peacock, head of the Antarctic Sciences Section, reported on a proposal for an eight-meter telescope at the South Pole to test cosmological models. Reviewers and a panel rated the proposal excellent, and the subcommittee recommended the proposal to the CPP.

g. CPP Task Force on Science and Engineering Infrastructure (INF)

Dr. White, chair, reported that Dr. Peter Freeman, Assistant Director for Computer and Information Sciences and Engineering, provided an update on the draft report of the Advisory Committee on Cyber Infrastructure.

Two representatives from the Office of Management and Budget (OMB), Mr. David Radzanowski and Ms. Sarah Horrigan, and Mr. Michael Holland from the Office of Science and Technology Policy discussed the draft report with the task force. Concerns included the need for consistency in what is called “infrastructure,” recognition of the magnitude of the required funding, and the importance of setting priorities for funding.

The task force is preparing its recommendations and intends to bring a preliminary report to the Board at the October meeting.

h. Committee on Strategy and Budget (CSB)

Dr. Savitz, chair, reported that the committee had discussed four topics.

- Recent Senate Appropriations Committee action on the FY 2003 budget, which recommended \$79 million in funding for the MREFC account and directed NSF to provide funds to the National Academy of Sciences for a study of the NSF process for prioritizing projects in the MREFC account. A small working group of CPP and CSB members will be formed to work with NSF in reviewing policies governing the initiation of new large research projects.
- Revision of the NSF strategic plan. A draft is due to OMB by March 1, 2003. Dr. Colwell briefed the committee on plans to revise the GPRA plan, outlined a framework for NSF’s strategic plan, and emphasized the plan’s connection to the President’s management scorecard and to OMB’s new program assessments rating tool. The committee discussed the serious workload impact of these various assessments.
- Submission of NSF’s FY 2004 budget request to OMB. Dr. Colwell briefed the committee on the budget request and its connection to the strategic plan, the Administration’s national priorities, and strategic issues that the committee has focused on this year. The committee approved a resolution recommending that the budget be approved by the full Board, and the Board took that action in Closed Session.
- Environmental research. Dr. Leinen briefed the committee on NSF’s efforts to meet the recommendations in *Environmental Science and Engineering for the 21st Century*. Although NSF’s budget requests have been consistent with the goals set in the report, appropriations have been less than requested. Dr. Leinen outlined steps that NSF has taken and will take to convince the Administration, the Congress, and the public of the need for increased resources.

AGENDA ITEM 12: Other Business

After thanking the many NSF staff members who helped prepare for and who participated in the meeting, Dr. Washington adjourned the Open Session at 4:30 p.m.

Janice E. Baker
Policy Writer/Editor