

NSB-01-41

**APPROVED MINUTES<sup>1</sup>  
OPEN SESSION  
362nd MEETING  
NATIONAL SCIENCE BOARD**

The National Science Foundation  
Arlington, Virginia  
March 15, 2001

Members Present:

Eamon M. Kelly, Chairman  
Anita K. Jones, Vice Chair  
John A. Armstrong  
Nina V. Fedoroff  
Pamela A. Ferguson  
Mary K. Gaillard  
M.R.C. Greenwood  
Stanley V. Jaskolski  
George M. Langford  
Jane Lubchenco  
Joseph A. Miller, Jr.  
Diana S. Natalicio  
Robert C. Richardson  
Vera Rubin  
Maxine Savitz  
Luis Sequeira  
Daniel Simberloff  
Bob H. Suzuki  
Richard Tapia  
Warren M. Washington  
Mark S. Wrighton

Rita R. Colwell, NSF Director

Members Absent:

Michael G. Rossmann  
Chang-lin Tien  
John A. White, Jr.

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<sup>1</sup> The minutes of the 362<sup>nd</sup> meeting were approved by the Board at the May 24, 2001 meeting.

The National Science Board (NSB) convened in Open Session at 2:30 p.m. on Thursday, March 15, 2001, with Dr. Eamon Kelly, Chairman of the Board, presiding (Agenda NSB-01-32). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 8: Oath of Office to Mark Wrighton

Dr. Kelly administered the oath of office to Dr. Mark Wrighton, Chancellor of the Washington University in St. Louis.

AGENDA ITEM 13: Polar Programs Recognition

With the permission of the Board and in respect to the time constraints for special guests, Dr. Kelly moved to Agenda Item 13.

Dr. Kelly reported that he, Dr. Pamela Ferguson, Dr. Jane Lubchenco, and Dr. Marta Cehelsky had visited the Antarctic in January to observe the National Science Foundation's (NSF's) research operation on behalf of the Federal government. He noted that the operation requires close collaboration with other Federal agencies, especially the Air National Guard, which has taken over logistical support from the Navy during the past two years. Dr. Kelly introduced six distinguished guests from the Air National Guard, including Colonel Richard Saburro, Commander of Operation Deep Freeze.

Dr. Rita Colwell, NSF Director, recognized Colonel Saburro as the key person in the successful transition of air support for the U.S. Antarctica Program. After noting his many accomplishments, Dr. Colwell presented Colonel Saburro with the United States Antarctic Program Medallion, the highest award given by the program.

AGENDA ITEM 9: Open Session Minutes, December 2000

The Board APPROVED the Open Session minutes of the December 2000 meeting (NSB-00-222, Board Book Tab C).

AGENDA ITEM 10: Closed Session Items for May 2001

The Board APPROVED the Closed Session items for the May 2001 Board Meeting (NSB-01-21, Board Book Tab D).

AGENDA ITEM 11: Chairman's Report

**a. Dr. Rossmann's Prize**

Dr. Kelly announced that Dr. Michael Rossmann was not present because he was in Germany receiving the Paul Ehrlich and Ludwig Darmstaedter Prize, Germany's most distinguished award in scientific research.

## **b. Board Retreat**

Dr. Kelly reported that the Board had a productive retreat in February, led by the Retreat Committee chaired by Dr. Anita Jones. He asked Dr. Jones to comment on the committee's reflections and conclusions since the retreat.

Dr. Jones commented on three areas identified for action: outreach, use of resources, and strategy and budget.

*Outreach:* Dr. Jones, in consultation with recent committee chairs, will evaluate recent Board experience in producing reports and their related outreach activities and will report to the Board at the next meeting. In response to the Board's expressed interest in having direct contact with programs and people, Board members have received copies of the various directorate advisory committee reports. In the future, meeting with chairs of advisory committees may be set up, and some Board meetings may be held outside the Foundation at major sites.

*Use of resources:* The Retreat Committee has asked the Audit and Oversight Committee to take a thoughtful look at resources available to the Board—Board members' own time, the time of Board Office staff, the time of a number of NSF staff who help the Board do its work, and funding. The A&O Committee will begin by looking at Board member time allocation and how that time may be used more effectively.

*Strategy and budget:* Dr. Jones called attention to the draft charter for the creation of a new standing committee, the Committee on Strategy and Budget, that was distributed to the Board for comment. The new committee would analyze NSF's budget to ensure progress and consistency against strategic direction for NSF and would identify strategic (typically long-term) issues critical to NSF's future. In response to Dr. Mary K. Gaillard's comment, a sentence will be added to the draft charter, stating that in reviewing the budget from a strategic point of view, the committee will take care to make a balance between investments in strategy and investments in the core program.

Dr. Kelly opened discussion of the draft charter. In response to questions, he clarified the relationship of the new committee to the Executive Committee. On matters of budget, the new committee would relieve the Executive Committee of its current budget responsibility and would report directly to the Board. The Board would either approve the entire annual budget as it is required to do, or it could delegate that approval to the Executive Committee, operating on behalf of the Board in the full Board's absence. The new committee would work directly with NSF senior management on budget matters. It is expected that the new committee would be able to devote more time to budget work than has been possible for the Executive Committee.

In response to questions about committee membership and workload, Dr. Kelly replied that if the establishment of the new committee were approved, it would be necessary to reassess the assignment of committees and the priority activities of the Board. Current Board member responsibilities would be reallocated to ensure efficiency. The

membership of the new committee would be representational, including members from the other three standing committees and other key task forces.

The Board APPROVED the motion to establish the Committee on Strategy and Budget as a standing committee.

**c. Dr. Chubin's Departure**

Dr. Kelly reported that Dr. Daryl Chubin, Senior Policy Officer, was leaving NSF to join the staff of the National Action Council for Minorities in Engineering, a nonprofit corporation led by Dr. John Slaughter, a former NSF Director. He summarized Dr. Chubin's contributions in support of the Board's policy work in education and human resources. Dr. Colwell offered her congratulations, expressing thanks to Dr. Chubin for his contributions to NSF, especially in the areas of education and workforce research.

AGENDA ITEM 12: Director's Report

**a. Staff Introductions**

Dr. Colwell introduced several recently appointed staff: Dr. Frank C. Greene, Director of the Division of Integrative Biology, Directorate for Biological Sciences; Mr. Thomas C. Cross, Deputy Inspector General; Mr. John H. Mitchell, Senior Advisor, Office of the Director; and Mr. Terence Schaff, Senior Advisor for Legislative Activities in the Office of Legislative and Public Affairs.

**b. Congressional Update**

Dr. Colwell reported that the House Science Committee held a hearing on K-12 Math and Science Education: The View from the Blackboard on March 7. Witnesses included three winners of the Presidential Awards for Excellence in Math and Science Teaching. The NSF continues to receive requests for staff briefings on a wide variety of NSF programs, with specific interest in NSF's K-12 education programs.

The House Veterans Affairs–Housing and Urban Development (VA-HUD) Appropriations Subcommittee has set March 21 and 22 for hearings to receive testimony from outside witnesses on agencies within the subcommittee's jurisdiction, including NSF. The House VA-HUD hearing on NSF's budget request is scheduled for April 3. June 6 is the date set for the Senate VA-HUD hearing.

Two bills that specifically address NSF programs have been introduced. Senate bill 430, the Broadband Rural Research Investment Act of 2001, authorizes \$25 million to NSF for the purpose of promoting research to enhance the availability of the Internet in rural areas. House bill 932, the Science Teacher Scholarships for Scientists and Engineers Act, authorizes \$20 million for NSF to provide scholarships (\$7,500) for scientists and engineers to become certified as science, math, and technology teachers in elementary and secondary schools.

NON-AGENDA ITEM: Draft Statement

Dr. Kelly noted that several Board members had requested that the Board make a statement concerning the importance of investments in science generally, adding the Board's voice to many others that are trying to raise this issue in the public consciousness. He called the Board's attention to a draft statement, "Strengthening the Federal Commitment to Science and Technology," and explained that the Committee on Strategic Science and Engineering Policy Issues had reviewed and commented on the draft. Dr. Kelly asked for the Board's views on issuing such a statement at this time and whether the draft statement included the appropriate themes.

After discussion, Dr. Kelly summarized the sense of the Board that while the draft statement expresses the position of the Board, considerations of timing and defining the appropriate target audience suggest holding it in reserve and rewriting, as needed, for another occasion. Alternative suggestions included making the statement in a cover letter accompanying the budget proposal, or submitting the statement as an op-ed article or editorial.

AGENDA ITEM 14: Report: Allocating Federal Resources for S&T

Dr. Kelly referred the Board to the draft report on allocating Federal resources for science and technology. He summarized the process that had brought the document to this point and asked if there were additional comments on the draft and if the Board were ready to release the draft as a discussion document for a stakeholder symposium in May.

The Board ACCEPTED the draft report, "The Scientific Allocation of Scientific Resource," NSB-01-39, and the proposal to hold a symposium in May.

Dr. Kelly announced that the one-and-a-half day symposium would precede the May Board meeting, beginning in the afternoon of May 21.

AGENDA ITEM 15: Director's Merit Review Report

Dr. Colwell introduced Dr. Nathaniel Pitts, Director of the Office of Integrative Activities, to present the report.

Dr. Pitts stated that for the last ten years NSF has received approximately 30,000 proposals per year and has made approximately 10,000 awards per year. This year the overall funding rate was 33 percent. The average award size was \$105,000.

After a brief summary of the contents of the Merit Review Report, Dr. Pitts focused on two areas: the use of merit review criteria and the time to decision, or dwell time.

The first full year using the merit criteria was FY 1999. NSF's GPRA goal states that NSF is successful when reviewers and program officers address both criteria in proposal reviews. The GPRA results for FY 2000 show that NSF did not achieve that goal. Only

20 of 58 Committee of Visitors reports rated NSF's performance as successful. An evaluation by the National Association for Public Administrators, mandated by the Senate, determined that it was too soon to evaluate how well NSF is implementing its merit review criteria. In FY 2000, NSF issued guidance to the community, stressing the importance of addressing both criteria in proposals and reviews; changed FastLane to show separate screens for the two criteria; and required program officers to address both criteria in internal documents that justify or decline awards. In FY 2001, NSF intends to develop guidelines to clarify the criteria, provide examples to show proposers and reviewers how to address each criterion successfully, and strengthen program officer training on the use of merit review criteria.

For dwell time, the GPRA goal is that 70 percent of proposers receive an answer from NSF within six months. This year NSF provided responses within six months to 54 percent of the proposers. At the seventh month mark, 71 percent had received responses. NSF intends to track the stages of the process, look for bottlenecks, make incremental changes, use electronic means to speed up the process, look at workforce allocation, and improve training of NSF staff.

*Discussion:* In response to questions, Dr. Pitts stated that the performance plan for FY 2002 may be modified once the budget for that year is determined.

During discussion of criterion two, Board members noted that implementation requires more than providing information; the criterion must influence funding decisions. In many cases, researchers may be carrying out criterion two but are not stating these activities to their advantage in the proposal or review. Dr. Warren Washington noted that the advisory group of the Office on Polar Programs had provided concrete examples to assist proposers and reviewers with criterion two. In response to the question of how many proposals are sent back because criterion two was not addressed, Dr. Joseph Bordogna, Deputy Director, replied that rejecting a proposal for failure to address criterion two would be harsh when the criterion has been in effect for only a year and a half. NSF is trying to raise consciousness among its own staff as well as institutions, proposers, and reviewers.

Board members pointed out that criterion two and the diversity issue need to be considered together. In the future, more and more scientists will not be white males, which is a rationale for proposers to address criterion two. Dr. Bob Suzuki noted that the EHR Committee intends to examine criterion two and the diversity issue in the near future. Dr. Washington suggested that in view of CPP's interest, the topic might be a joint item for the EHR and CPP committees. Dr. Bordogna added that it would be useful if the committees could develop advice on how best to implement criterion two, similar to the guidance prepared by the Office of Polar Programs.

Dr. Kelly remarked that in implementing criterion two, NSF is attempting a cultural change among proposers and reviewers, and a culture change takes time to become effective.

Dr. Bordogna responded to questions about FastLane, saying that recent comments from users tend to be more widely distributed, like a bell-shaped curve, than the bipolar responses received earlier. A SWAT team assists users having difficulty with FastLane.

ADENDA ITEM 16: Committee Reports

**a. Audit and Oversight (A&O)**

Dr. Daniel Simberloff reported for Dr. Stan Jaskolski, committee chair, that the committee heard reports on GPRA for FY 2000 and performance plans for FY 2001 and 2002. They also heard the Director's Merit Review Report and received an update on customer service survey data; concerns focused on dwell time and criterion two. Other reports dealt with NSF financial statements and audits, and the work of the NSF Management Controls Committee. It was noted that NSF is required to submit an administrative and management strategic plan to the Office of Management and Budget this summer.

In closed session, the committee discussed and concurred with the Inspector General's budget request for FY 2002, established a schedule for reviewing the next Semi-Annual Report and approving the agency Management Response, heard a presentation by Mr. Thomas Cooley, Director of the Office of Budget, Finance and Award Management, on systematic corrective actions to deal with problems identified in the Gemini audit, and received briefings on active investigations and audits.

**b. Committee on Programs and Plans (CPP)**

Dr. Robert Richardson, reporting for Dr. John Armstrong, committee chair, stated that the committee considered a proposed award for the operation of the International Gemini Observatory and recommended its approval to the full Board in Closed Session. Staff were requested to provide follow-up information at future meetings.

The committee continued its discussion of planning for cyber-infrastructure and research. A strategic plan is being developed to include a broad vision for all users, as well as more specific rationales for subsets of users, including the needs of high-end users.

The Polar Issues Subcommittee reported on updates of Arctic and Antarctic activities and on the strong positive response to plans for an Antarctic proposal workshop to reach out to young investigators and underrepresented groups.

The Task Force on Science and Engineering Infrastructure reported on its continuing discussions to define its tasks and identify areas where NSF can make a significant impact. The task force will explore ways to get information from NSF programs, other agencies, and the community in preparing a report.

The committee also received an update on Major Research Equipment, facilities management, and budget issues. Management of large projects was discussed, including

unique features of NSF facilities management. The committee was briefed on new management procedures.

**c. Education and Human Resources Committee (EHR)**

Dr. Richard Tapia reported for Dr. Bob Suzuki, committee chair, that the committee reviewed an outline for the content of a draft report on NSF's Leadership Role in K-16 SMET Education. It is anticipated that a draft report will be ready for review at the May meeting.

The committee discussed the development and applications of the science of learning. Several committee members shared their impressions of a recent conference entitled "Applying the Science of Learning to the University and Beyond," held at California Polytechnic-Pomona.

The committee also reviewed a draft statement on education and human resource development for the 21<sup>st</sup> century, which is being developed as a briefing document for the Administration.

*EHR Subcommittee on Science and Engineering Indicators (S&EI)*

Dr. Tapia, subcommittee chair, reported that Mr. Rolf Lehming, Program Director, Integrated Studies Program, Science Resources Studies Division (SRS), discussed a draft review schedule for *Indicators-2002* chapters, including suggested assignments of Board members as reviewers. The review schedule was distributed to all Board members. The complete draft version of *Indicators-2002* will be submitted to the Board in August.

Mr. Bill Noxon, Senior Public Affairs Specialist, Office of Legislative and Public Affairs (OLPA), presented options for disseminating *Indicators-2002*. The subcommittee suggested that the Board, in consultation with OLPA, consider retaining a public relations firm to assist in the rollout process. It was also suggested that reviewers forward exciting and interesting "nuggets" to OLPA for possible highlighting during the rollout. In response to a question about the timing of the release of *Indicators*, Dr. Lynda Carlson, Division Director, SRS, stated that SRS would develop timing options for release of future *Indicators* and discuss them with the subcommittee after the release of *Indicators-2002*.

Mr. Lehming submitted and the subcommittee approved a workplan for exploring the production of an environmental chapter for *Indicators-2004*. The subcommittee also approved Mr. Lehming's proposal for a procedure for handling issues on which the Board has taken a position. The Board description of the issues will be presented in text boxes, and the URL will be included as a source of additional information. SRS will not attempt to summarize the Board's conclusions or recommendations.

On behalf of the subcommittee, Dr. Tapia expressed deep appreciation to SRS staff for their excellent work over many years.



*EHR Task Force on National Workforce Policies for Science and Engineering (NWP)*

Dr. George Langford, reporting for Dr. Joseph Miller, committee chair, stated that the task force welcomed Dr. Karolyn Eisenstein as Executive Secretary. In January the task force had a briefing on data related to immigration and data on the acquisition of skills and knowledge by individuals who enter the science and technology workforce. At the meeting on the previous day, the task force covered data on the preparation of math and science teachers and heard reports from Dr. Jane Kahle, Division Director, Division of Elementary, Secondary and Informal Education, and Dr. Tom Smith, Senior Analyst, SRS. The main messages of the two reports were the need for an overhaul of teacher preparation and the fact that the type and range of national data on teachers do not get at how content and pedagogic skills are actually used in a classroom context to improve student teaching.

The task force is close to awarding a contract for data on foreign talent flows, which calls for a report to the task force by May 1. The data will be discussed at the May meeting. A contract for data on non-degree education is under consideration. The task force agreed that a workforce project being conducted by the California Council on Science and Technology could provide important input on issues and analyses directly related to the task force's workplan. Arrangements are being made for the Council to share its findings with the task force.

In executive session, the task force discussed policy challenges shaping its report and the timetable for its activities.

**d. Task Force on International Issues in Science and Engineering (ISE)**

Dr. Pamela Ferguson, on behalf of Dr. Diana Natalicio, committee chair, reminded the Board that the task force's original objective was to produce a comprehensive report on international science and engineering issues. Due to the transition between Administrations and the Director's request for guidance in this area for budget planning, the task force produced two smaller interim reports. The task force discussed how best to accomplish its original objective and agreed to prepare a primarily educational report, providing a model of how the United States is addressing international issues. The report would be aimed at a general audience in the United States. There has not been such a comprehensive report on international issues in science and engineering within the last ten years.

**e. Committee on Science and Engineering Policy Issues (SPI)**

Dr. Kelly, committee chair, reported that the committee discussed three documents: (1) the draft statement, "Strengthening the Federal Commitment to Science and Technology," (2) the draft paper, "Scientific Allocation of Scientific Resources," and (3) a draft agenda and possible guest list for the stakeholders' symposium in May.

**f. Task Force on the NSB's 50<sup>th</sup> Anniversary**

Dr. Vera Rubin, task force chair, reported that the task force discussed the distribution of the 50<sup>th</sup> Anniversary commemorative brochure to the science community, Federal officials, university leaders, and the media. The Board Office will coordinate with OLPA to include the brochure in the current distribution of the Nifty 50 and NSF's *America's Investment in the Future: NSF Celebrating 50 Years*. The task force also discussed whether to produce a scholarly, historical volume on the Board. There being considerable interest expressed by the task force, it was suggested that the issue be brought to the full Board. Dr. Rubin suggested that, because of the late hour, discussion of this issue be deferred until a future meeting.

Dr. Kelly and the Board thanked Dr. Rubin for her skillful leaderships of the task force.

AGENDA ITEM 17: Other Business

After thanking the many NSF staff members who helped prepare for the meeting, Dr. Kelly adjourned the Open Session at 4:35 p.m.

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Janice E. Baker  
Policy Writer/Editor