

**APPROVED MINUTES¹
OPEN SESSION
401ST MEETING
NATIONAL SCIENCE BOARD**

National Science Foundation
Arlington, Virginia
December 5-6, 2007

Members Present:

Steven C. Beering, Chairman
Mark R. Abbott
Dan E. Arvizu
Barry C. Barish
Camilla P. Benbow
Ray M. Bowen
Kelvin K. Droegemeier
Kenneth M. Ford
Patricia D. Galloway
José-Marie Griffiths
Elizabeth Hoffman
Louis J. Lanzerotti
Alan I. Leshner
Douglas D. Randall
Arthur K. Reilly
Jon C. Strauss
Thomas N. Taylor
Richard F. Thompson
Jo Anne Vasquez

Arden L. Bement, Jr., *ex officio*

Members Absent:

Kathryn D. Sullivan, Vice Chairman
John T. Bruer
G. Wayne Clough
Daniel Hastings
Karl Hess

¹ The minutes of the 401st meeting were approved by the Board at the February 2008 meeting.

The National Science Board (Board) convened in Open Session at 1:30 p.m. on Thursday, December 6, 2007 with Dr. Steven Beering, Chairman, presiding (Agenda NSB-07-124, Board Book Tab 13). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 5: Approval of Open Session Minutes, October 2007

The Board unanimously APPROVED the Open Session minutes of the October 2007 Board meeting (NSB-07-120, Board Book Tab 13F).

AGENDA ITEM 6: Closed Session Items for February 2008

The Board unanimously APPROVED the Closed Session items for the February 6-7, 2008 meeting (NSB-07-123, Board Book Tab 13G).

AGENDA ITEM 7: Chairman's Report

Dr. Beering reported on several issues:

a. *Office of Inspector General Semiannual Report to Congress, September 2007*

During November 2007, a notational vote was conducted by e-mail with Board Members, and the Board approved the transmittal memo and NSF management response for the *Office of Inspector General Semiannual Report to Congress, September 2007*. The Semiannual Report package, which included a cover memo from Dr. Beering, the NSF management response, and the printed report, were sent to Congress before the December 1, 2007 due date. Because of timing issues, it was not possible for the Board to conduct this business at the October or December 2007 Board meetings.

b. National Geographic Society DVD

Dr. Beering thanked the NSF Office of Legislative and Public Affairs (OLPA) for providing Board Members with the National Geographic Society DVD on the construction of the South Pole Station, which will be officially dedicated in January 2008. The video was played in the Board suite during the December 2007 Board meeting, and DVD copies were provided to each Board Member.

c. Task Force Announcements

Dr. Beering announced the appointment of members to the Board's newest task forces. The Task Force on Sustainable Energy, established at the October 2007 meeting: Drs. Dan Arvizu and Jon Strauss, co-chairmen, and task force members Drs. Mark Abbott, Camilla Benbow, John Bruer, Patricia Galloway, José-Marie Griffiths, Elizabeth Hoffman, Douglas Randall and Mr. Arthur Reilly.

The Task Force on Cost Sharing, also established at the October 2007 meeting: Dr. Kelvin Droegemeier, chairman, and the members Drs. Mark Abbott, Camilla Benbow, Daniel Hastings, Jon Strauss, Thomas Taylor, Richard Thompson, and Jo Anne Vasquez.

Dr. Beering discharged the Task Force on Transformative Research with special thanks to Dr. Douglas Randall, chairman, as well as Dr. Nina Fedoroff, who previously served as chairman. He also thanked Board Members who served on this task force over the past 3 years: Drs. Mark Abbott, John Bruer, Kelvin Droegemeier, Kenneth Ford, Daniel Hastings, Karl Hess, Louis Lanzerotti, and Alan Leshner, as well as Ms. Ann Ferrante of the Board Office who served as the Executive Secretary.

d. Board Member Recognition

Dr. Beering announced that Dr. Thompson received the 2007 Karl Spencer Lashley Award from the American Philosophical Society on November 9, 2007 in Philadelphia. The Lashley Award is one of the most prestigious prizes in behavioral neuroscience.

The Chairman also announced that Dr. Arden Bement was awarded the 2007 Award for Outstanding Achievement in Support of Science by the Council of Scientific Society Presidents. The award was for his lifetime leadership of scientific endeavors into excellence and eminence, for stimulation of outstanding progress on the frontiers of science, and for strategic vision and motivation of NSF into new directions addressing 21st century challenges.

e. Board Executive Officer Leave of Absence

Lastly, Dr. Beering announced that Dr. Michael Crosby, Executive Officer and Board Office Director, had requested a temporary leave of absence from his duties with the Board in accordance with the Intergovernmental Personnel Act (IPA) to serve as the Interim Vice Chancellor for Research at the University of Hawaii - Hilo (UHH) campus. Dr. Beering stated that this was an outstanding and unique professional development opportunity for Dr. Crosby that will benefit both the Board and UHH. The temporary IPA assignment would be effective as of January 8, 2008.

The purpose of Dr. Crosby's full-time temporary IPA detail would be to provide for strengthening the science and engineering research programs and management capabilities of UHH; to facilitate an effective means of developing and implementing new strategic approaches for UHH to stimulate sustainable improvements in the science and engineering (S&E) research capacity and competitiveness, in part through Federal S&E policies and programs; and university leadership and executive administration level S&E research program and developmental experience that would enhance Dr. Crosby's future performance upon his return as the Board's Executive Officer.

While serving as the Interim Vice Chancellor for Research, Dr. Crosby will be reporting directly to the UHH Chancellor, Dr. Rose Tseng. The length of his assignment will not exceed 24 months, with an initial commitment of 12 months and expected renewal of 12 months, upon mutual consent.

During his assignment, Dr. Crosby will attend one or two Board meetings every year in order to maintain a current awareness of Board activities and to provide feedback to the Board leadership on his IPA activities. He will also remain available to provide advice to Board Members and the Board Office.

Dr. Beering reported that he consulted with all Board Members regarding how best to make arrangements for an outstanding senior staff member from within the Board Office or the broader NSF to further their own professional development and experience by serving as the Acting Executive Officer for the Board during Dr. Crosby's absence. As a result of those discussions, Dr. Beering was in the process of interviewing a short list of candidates and will be consulting further with Board Members about the final selection.

Finally, Dr. Beering noted that Dr. Crosby had performed at an exceptional level in his responsibilities throughout his tenure as Executive Officer. He had provided excellent leadership and direction for the coordination of the development and analysis of a broad range of policy level issues and strategies requiring Board attention and/or action, and directing the administrative, operational, staff, and policy support to the Board. Dr. Beering stated that since becoming Board Chairman, he had observed the constructive and significantly high impact role that Dr. Crosby served as the Board's chief representative in leading day-to-day interactions with Congress, the administration, NSF assistant directors, Federal agencies, and the S&E research and education community. Dr. Beering commented that he was very grateful to Dr. Crosby for his remarkable contributions to the Board's efforts and wished him success in his next assignment.

AGENDA ITEM 8: Director's Report

Dr. Arden Bement, Jr., NSF Director, reported on the following items:

a. NSF Staff Announcements, Award, and Departure

Dr. Zakya Kafafi began serving under her Senior Executive Service (SES) limited-term appointment as Director, Division of Materials Research, on October 14, 2007. Dr. Kafafi came to NSF from the U.S. Naval Research Laboratory where she served as head of the Organic Optoelectronics Section since 2000. She has also been an Adjunct Full Professor in the Department of Chemistry at Catholic University since 1994. She received her Ph.D. in Chemistry in 1972 from Rice University.

Dr. Clifford Gabriel would begin his SES career appointment as Senior Advisor, Level II, on December 30, 2007. Dr. Gabriel had been a member of SES since 1996 and would transfer to NSF from the Environmental Protection Agency where he served as Director, Office of Prevention, Pesticides, and Toxic Substances. He received his Ph.D. in Plant Pathology/Virology in 1983 from the University of Wisconsin.

Dr. Mihail Roco, the primary coordinator of the U.S. nanotechnology science, engineering and technology effort, received the National Materials Advancement Award from the Federation of Materials Societies at a reception on December 5, 2007 at the National Press Club. This award

recognizes individuals who have demonstrated outstanding capabilities and contributions in advancing the multi-disciplinary field of materials science and engineering; the effective and economic use of materials in the marketplace and the application of materials development to national problems and defense; and the development and implementation of national policy which furthers the impact of materials sciences and engineering on our society.

Dr. Nathaniel Pitts, Director of the Office of Integrative Activities (OIA), announced his retirement effective January 3, 2008 after 30 years of service. Since joining NSF in 1977 as a neuroscience program officer, Dr. Pitts served with dedication and distinction in many senior roles and capacities. He also served on numerous intra- and interagency working groups including the Decade of the Brain. As OIA Director, he was responsible for overseeing and coordinating cross-NSF activities surrounding: the NSF-supported Science and Technology Centers; Integrative Partnerships; congressionally mandated Major Research Instrumentation Program; Presidential Early Career Awards for Science and Engineering; NSF Merit Review process; Committee of Visitors process; Government Performance Results Act implementation; congressionally mandated Committee on Equal Opportunity in S&E; promoting transformative research; and most recently, the seamless transition of Experimental Program to Stimulate Competitive Research (EPSCoR) to the Office of the Director. Dr. Bement, along with Dr. Kathie Olsen, NSF Deputy Director, thanked Dr. Pitts for his dedication in the service of science and the mission of the agency.

b. Congressional Update

Dr. Bement reported that the Government, including NSF, was operating under a continuing resolution at FY 2007 spending levels through December 14, 2007.

With regard to appropriations, the House and Senate Subcommittees on Commerce, Justice, Science conferees have been named, which were listed with the legislative update provided to Board Members (Board Book Tab 13H). Congress and the White House continued to try and find a workable solution to the impasse. Dr. Bement reported that it was unclear when a bill would be signed into law.

Since the October 2007 Board meeting, NSF participated in two hearings before the House Science and Technology Subcommittee on Research and Science Education. The first was on Nanotechnology Education with Dr. David Ucko, Deputy Division Director, Division of Research on Learning in Formal and Informal Settings, Directorate of Education and Human Resources (EHR) providing testimony. The second hearing was on Women in Academic Science and Engineering with Dr. Olsen as the NSF witness.

On December 3, 2007, Dr. Bement and Congressman Alan Mollohan, Chairman of the House Appropriations Subcommittee on Commerce, Justice, and Science, toured West Virginia University (WVU). They met with West Virginia EPSCoR Council members, state officials, and key faculty from WVU, Marshall University, and other state colleges and universities to discuss West Virginia's 2015 strategic plan, which could serve as a model for other EPSCoR states. They also visited with numerous WVU faculty and students to review nanotechnology and biometrics research funded by NSF. Dr. Bement stated that he was impressed with the

high level of excellence, and the students' in-depth knowledge of their subjects and enthusiasm. He was also grateful for Congressman Mollohan's efforts to support science research.

AGENDA ITEM 9: Open Committee Reports

a. Audit and Oversight (A&O) Committee

Dr. Dan Arvizu, A&O chairman, reported that in November 2007 the Board approved by e-mail vote the transmittal letter accompanying the *Office of Inspector General Semiannual Report to Congress, September 2007*, as mentioned in the Chairman's Report. Dr. Arvizu stated that Mr. Sal Ercolano, the partner-in-charge of NSF's financial statement audit and the IT security program review with Clifton Gunderson LLP, presented the results of the two reviews. In the review of the financial statements, the auditors gave NSF an unqualified opinion on the agency's financial statements and found no material weaknesses. However, the auditors cited the agency for two significant deficiencies: (1) contract monitoring, which is a continuation from last year's audit; and (2) property, plant, and equipment (PP&E) accounting and reporting related to the U.S. Antarctic Program. Mr. Ercolano also spoke about the recommendations in the report for addressing these deficiencies. The agency's information technology (IT) security program review, or the Federal Information Security Management Act (FISMA) report, contained six findings including four new ones, none of which were considered a significant deficiency (Board Book Tab 5B).

Mr. Thomas Cooley, NSF Chief Financial Officer, reported on steps that the agency is taking to address the two significant deficiencies that Mr. Ercolano noted. The contract monitoring finding, which was an expected continuation from the 2006 audit, will be aggressively addressed this year. The PP&E accounting and reporting issue is still being discussed, and further systems testing was planned to understand that issue better. Mr. Cooley stated that it is important to identify an appropriate cost effective solution in the next year because this will be a factor in developing the solicitation for the upcoming recompetition for the Antarctic contract, which expires in 2010. Mr. Cooley also expressed the agency's pride in successfully addressing the long-standing award monitoring reportable condition. He appreciated Mr. Ercolano's praise for the quality of the agency's financial statements and thanked his staff for all of their hard work. Both Mr. Cooley and Mr. Ercolano were pleased with the high level of cooperation and communication in the day-to-day work conducted during the audit. The A&O Committee also thanked Mr. Cooley and the NSF staff for their hard work and diligence in getting to resolution and closure of the award monitoring reportable condition.

Dr. Gloria Rogers, Chairman of the Advisory Committee for the GPRA Performance Assessment (AC/GPA), reported on the committee's meeting of June 14-15, 2007. She outlined the 2007 charge to the committee, which included assessment of three strategic outcome goals identified in *NSF Investing in America's Future: Strategic Plan FY 2006 – 2011*, "Discovery," "Learning," and "Research Infrastructure," as well as a request for comments and recommendations regarding transformative research at NSF. She noted that the fourth strategic outcome goal, "Stewardship," was being assessed internally by NSF. The committee reviewed over 1,000 highlights, Committee of Visitor reports, and other available sources, and determined that there was clear evidence of significant achievement for the three strategic outcomes. The

committee report includes five recommendations to improve the assessment process. Dr. Rogers noted that the NSF staff had already taken actions to implement many of these recommendations.

Dr. Olsen provided an update on NSF's human capital activities. She presented the human capital challenges facing NSF, provided a snapshot of NSF's workforce, and reported on current human capital efforts. Dr. Olsen noted that the Succession Plan Working Group, which she had appointed, had expanded its initial mandate that focused on succession planning to address the full spectrum of human capital planning. As a result of the group's effort, a draft human capital plan, which incorporates both workforce and succession plans for NSF, will be available for NSF staff and stakeholder comment. Dr. Olsen outlined the plan's goals and underlying principles, including the aspiration that NSF be a strong learning organization. Both Dr. Olsen and Board Members noted the benefits and human capital challenges arising from a constantly rotating workforce.

Dr. Olsen noted that NSF's Executive Resources Board had examined the balance between permanent staff and rotators at the executive level and that even increased turnover is expected among permanent staff due to a pending retirement wave. She also provided Board Members with NSF workforce retirement statistics, which indicates that a large increase, approximately double, in the retirement eligible personnel will occur over the next 4 years. Regarding resources for human capital investment, Dr. Olsen indicated that one of her priorities was to understand the full cost needed to support individual staff, and that the Human Resources Division had been charged to develop a formula that would capture accurately the full cost by including such factors as salary, training, equipment, and space. In discussions about attracting top talent to work at NSF, it was suggested that the Board look at how conflict of interest rules impact attracting researchers at NSF, and that NSF should highlight the positive boost working at NSF has on an individual's career.

Lastly, Ms. Jill Schamberger, Office of Inspector General (OIG) audit manager, briefed the committee about an audit of NSF's oversight and management of its research center programs (Board Book Tab 5C). The audit found that implementation of guidance around center programs, given by the agency and the Board, is not consistently implemented among the centers, and not well communicated. The audit report recommends that a written policy would facilitate full implementation, and that establishing a forum would promote the sharing of experiences and best practices. The agency agreed that it can do a better job of communicating, but it is concerned that a written policy may be too prescriptive and will need further review and perhaps additional flexibility.

b. Education and Human Resources (EHR) Committee

Dr. Elizabeth Hoffman, EHR chairman, noted that the Board report, *Moving Forward to Improve Engineering Education (NSB-07-122)* was published. She thanked members of the *ad hoc* Engineering Education Group, Drs. Wayne Clough, Daniel Hastings, and Louis Lanzerotti, for their dedicated service over the past several years.

Additionally, Dr. Hoffman noted that the Board report, *National Action Plan for Addressing the Critical Needs of the U.S. Science, Technology, Engineering, and Mathematics*

Education System (NSB-07-114), also referred to as the STEM action plan, was also published. The committee encouraged members to share this document widely and to look for opportunities to bring the recommendations to the groups that will make implementation possible. Both publications were printed during November 2007 and provided to Board Members, and would be distributed during December 2007 and January 2008.

Dr. Cora Marrett, Assistant Director, NSF EHR Directorate, provided useful suggestions for the committee's response to Congressman Rush Holt, which align with the recommendations in the STEM action plan, and will highlight recent developments and plans for the future. Emphasis is being placed on evaluation and enhanced interaction within NSF and with external communities.

Dr. Linda Slakey, Division Director, Division of Undergraduate Education, informed the committee of NSF's plans for implementing the recommendations of the STEM action plan. Dr. Slakey noted the dynamic roadmap to achieve NSF's goals to develop human capital in STEM teaching, support research on learning and education, and increase public understanding or public engagement of STEM education. She provided an example for achieving excellent teacher education with specific goals and challenges.

Dr. Benbow presented information on preparing STEM innovators. She noted that an *ad hoc* group will prepare a draft charge for EHR to review in February 2008. The group will propose how to develop and stimulate STEM innovators.

Dr. Crosby stated that the Board Office had contacted the staff of Congressman Holt and confirmed his continued interest in receiving a follow-up to the Board's preliminary response to the Congressman's September 2006 letter. Committee members were encouraged to send comments to Dr. Crosby before the February 2008 meeting to prepare a draft report to Congressman Holt. Dr. Hoffman thanked Dr. Marrett for the materials on this subject, which will assist in the preparation of the report. The committee will discuss the draft report at the February 2008 meeting.

c. EHR Subcommittee on Science and Engineering Indicators (SEI)

Dr. Louis Lanzerotti, SEI chairman, reported that Mr. Rolf Lehming, Science Resources Statistics (SRS) Director for the Science and Engineering Program, Directorate for Social Behavioral, and Economic Sciences (SBE), provided a progress report on *Science and Engineering Indicators 2008 (Indicators)* (NSB-08-1), and indicated that the completion process was going smoothly for the release on January 15, 2008.

Dr. Lanzerotti reported that the Companion Piece to the *Indicators* publication, *Research and Development: Essential Foundation for U.S. Competitiveness in a Global Economy* (NSB-08-3) (Board Book Supplemental Materials, Tab 6) was completed, despite the late start. He appreciated comments submitted by Board Members, and thanked those who made special contributions to the development of the initial draft: Drs. Bement, Bruer, Clough, Galloway, and Mr. Reilly. Upon the recommendation of the subcommittee for approved of the draft Companion Piece for publication, EHR approved the action and forwarded it to the full Board for approval.

The Board unanimously APPROVED the Companion Piece, *Research and Development: Essential Foundation for U.S. Competitiveness in a Global Economy* (NSB-08-3), subject to final edits approved by the Board Chairman and the SEI chairman.

Dr. Beering commented that he was amazed at the comprehensiveness and the excellence of the statements in the Companion Piece, and thanked Dr. Lanzerotti and SEI for this effort.

SEI discussed the rollout of *Indicators*, which had a new delivery date of January 15, 2008 for release to both the President and Congress. The Board Office had been working with OLPA for this release, first on Capitol Hill and, because of the focus of the Companion Piece on the role of industry in U.S. research and development in our Nation's competitiveness, a second rollout event will be held at the U.S. Chamber of Commerce. All Board Members were invited to attend these events.

The subcommittee had an update on the *Digest for Key Science and Engineering Indicators 2008* (Digest) (NSB-08-2), which was approved at the October 2007 Board meeting. The cover design is similar to, but distinct from, *Indicators*, and incorporates images of polar regions in honor of the International Polar Year (IPY). Dr. Lanzerotti noted one suggestion from Board Members at the October 2007 to include additional data related to employment in high tech manufacturing and knowledge intensive services. A number of data sources were identified and reviewed by the Board Office and a contractor as well as by SRS. After seeing these data and getting advice from both sources, Drs. Lanzerotti and Beering decided against using the new indicator for this issue of the Digest. Dr. Lanzerotti noted that this would be the initial publication of the Digest, and that the Board can substitute or add other data in a future Digest.

Finally, SEI discussed *Indicators 2010*. The subcommittee will meet in February, March, and May 2008 to plan the contents of *Indicators 2010* that might include (1) workshops or roundtable discussions, which will be organized by the Board Office, will be held in mid-February 2008 with the National Academies Government-University-Research Roundtable, and possibly another at the end of February 2008 in association with a meeting of the National Governors Association, to explore additional data related to industrial activities and research and competitiveness and to improve, update, and enhance the utility of the chapter on State Indicators; (2) invited presentations from industry and state spokespersons related to these two initiatives and activities, as well as some discussions with SRS staff concerning expansion of *Indicators* data in specific areas such as cyberinfrastructure as well as interdisciplinary research.

d. Committee on Programs and Plans (CPP)

Dr. Kenneth Ford, CPP chairman, reported that the committee reviewed the FY 2008 Schedule of Action and Information Items for NSB Review. The list of critical action and information items reflects the revision to the process approved by CPP at the August 2008 Board meeting in the document, "Transmitting Director's Review Board (DRB) Packages to the National Science Board" (NSB-CPP-07-30, Board Book Tab 7B). NSF would now present background information for DRB actions to the Board, a maximum of 6 months prior. This would increase the demand for time on the CPP agenda, but should add to the quality of work in the oversight process.

Dr. Lanzerotti led a discussion on NSF policy on recompetition of NSF awards, and provided several policy options for the Board to consider, which were distributed in to Board Members (Board Book Supplemental Materials Tab 2). A seventh option was subsequently added to the list after discussions between Dr. Lanzerotti and the NSF Director's Office, in particular Dr. Olsen, and the Board Office. Drs. Lanzerotti and Olsen worked together to propose a draft policy on recompetition for the committee to consider. CPP will continue discussion of this issue at the February 2008 meeting.

Dr. Abbott led the continued discussion on facilities operations and management (O&M), and provided the committee with background information on this subject. Dr. Abbott will work with the Board Office to prepare an initial draft response to Congress regarding the appropriateness of using research and related activities (R&RA) account as the source of funding for O&M and preconstruction costs of the NSF's major research equipment and facilities as required by the America COMPETES Act. (COMPETES: America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science.) A draft will be circulated to CPP members for comments, and NSF will also be informed about these developments. The committee agreed to schedule a teleconference in mid-January 2008 to continue this discussion.

Dr. Olsen provided the committee with a detailed presentation and an update on major research equipment and facilities construction (MREFC) and large facilities. The update included information on large facilities under construction or about to be constructed. Dr. Olsen provided a follow-on to policy issues raised in her August 2007 presentation including: prioritization of future projects, international partnerships, data sharing and interoperability, control of cost growth of MREFC projects, and integration of MREFC projects with education and outreach activities associated with these projects. NSF's implementation of the Board policy on recompetition in connection with operation of MREFC projects was also reviewed. NSF has established an MREFC working group chaired by Dr. Mark Coles, Deputy for Large Facilities, and its charge was distributed to CPP. Further discussion was proposed for the February 2008 Board meeting. Because a final report on the MREFC management review is needed to respond to Congress by February and a draft will be developed in January 2008, CPP and NSF will need to work closely together to ensure integration of discussions and reporting on these activities.

The committee discussed background information relevant to Board reporting actions, in particular, NSF was asked to provide background information to support Board reporting actions required by the America COMPETES Act. Dr. Olsen provided this information on two Board reporting actions: (1) Evaluate and report on within 1 year the role and effectiveness of NSF in supporting interdisciplinary research; and (2) conduct a review and assessment within 3 years of the NSF Pilot Program of Grants for New Investigators. Dr. Olsen reported that a new working group on interdisciplinary research had been merged with the former group on transformative research. They are expected to report regularly to NSF and the Board on their deliberations and recommendations over the next year. Dr. Olsen also reported that the America COMPETES Act Policy Working Group had been established to evaluate the recommendations and reporting requirements in the America COMPETES Act, including the requirements for a pilot new investigator program. These groups had been charged to develop recommendations to NSF senior management. NSF will provide the Board with planning and implementation updates and NSF will coordinate with CPP as these working groups proceed.

The committee addressed two information items. The first information item was on the NSF Review of the Management of the National Radio Astronomy Observatory (NRAO) by the Associated Universities, Inc. (AUI) (Board Book Tab 7D). Dr. Tony Chan, Assistant Director, Directorate for Mathematical Physical Sciences (MPS), and Dr. Vernon Pankonin, Program Officer for NRAO, presented this information item to the committee. AUI manages the operation of NRAO and the North American responsibilities for the Atacama Large Millimeter Array (ALMA), which is a radio astronomy facility funded through the MREFC account and currently under construction. NSF's review of AUI's management concluded that the award to AUI should not be recompeted at this time, due in large part to the potential impact of recompetition on ALMA construction. NSF expects to bring a renewal proposal to the Board in March 2009. The next management review for AUI will be in 2011 or 2012 when ALMA is scheduled to be complete.

The second information item was on the National Ecological Observatory Network (NEON). Dr. James Collins, Assistant Director, Directorate for Biological Sciences (BIO), presented this information item and summarized the history and purpose of NEON in preparation for the action item addressed in the CPP Closed Session.

Lastly, Dr. Jeannette Wing, Assistant Director, Directorate for Computer and Information Science and Engineering (CISE), presented an information item on an Experimental Infrastructure for Network Science. This information item was previously on the CPP agenda as Global Environment for Network Innovations (GENI) (Board Book Tab 7E). Dr. Wing provided the committee with a broad outline for this potential work, which is still in the conceptual stage.

Dr. Ford reported on the status of the following subcommittee and task forces:

Subcommittee on Polar Issues (SOPI)

Dr. Barry Barish, SOPI chairman, reported that Dr. Karl Erb, Director of the Office of Polar Programs (OPP), provided an extensive report on recent event in Antarctica, including the sinking of a Canadian commercial tourist ship in the Antarctic Ocean, the *M/S Explorer*.

Task Force on International Science (INT)

Dr. Jon Strauss, INT chairman, reported that the task force reviewed changes to the draft report, *International Science and Engineering Partnerships: A Priority for U.S. Foreign Policy and Our Nation's Innovation Enterprise*, dated December 4, 2007 (NSB-07-10) (Board Book Supplemental Materials Tab 1) that followed the public review and comment period. The committee voted to approve the final draft report, and recommended approval by the full Board.

The Board unanimously approved the draft report, *International Science and Engineering Partnerships: A Priority for U.S. Foreign Policy and Our Nation's Innovation Enterprise* (NSB-07-10), subject to minor edits approved by the Board Chairman and the INT chairman.

Task Force on Sustainable Energy (SE)

Drs. Dan Arvizu and Jon Strauss, SE co-chairmen, reported that task force outlined plans to have a coordinated and concerted multi-agency effort to address the charge to this task force. The first SE roundtable would be held on February 8, 2008, the day after the next Board meeting. (SE Charge, Board Book Tab 4A)

Task Force on Transformative Research (TR)

As mentioned in the Chairman's Report, TR was discharged. The committee thanked Dr. Douglas Randall, TR chairman, as well as Dr. Nina Fedoroff, former TR chairman, and the task force members for their substantial and thoughtful work. CPP looks forward to NSF's continued updates on its implementation plans.

e. Committee on Strategy and Budget (CSB)

Dr. Ray Bowen, CSB chairman, reported the committee discussed a number of proposal submission limitations by single institutions or principal investigators. The America COMPETES Act asked the Board to report to Congress by August 2008 on this topic. In anticipation of the CSB response to this request, Dr. Jacqueline Meszaros, Program Director Division of Social and Economic Sciences, Directorate for Social, Behavioral, and Economic Sciences (SBE) presented information on behalf of the Impact of Proposal and Award Management Mechanisms (IPAMM) Working Group. In that presentation, she highlighted the IPAMM findings from their opinion survey. The information provided illustrated that programs with proposal submission limitations are a small part of the NSF portfolio. In the subsequent discussion, it was suggested that it would be useful if CSB had a better understanding of how institutions managed proposal development and submissions in cases where limits are in place. Dr. Olsen offered to provide information on that question at the February 2008 meeting.

The committee discussed the revised draft Board guidance on NSF average award size, duration and proposal success rate. The discussion was based on a Discussion Draft No. 4, which was provided to Board Members (Board Book Supplemental Materials Tab 7). This draft evolved from one that Dr. Bowen prepared several weeks ago and was revised by Drs. Strauss and Randall. The draft did not address the question of limits on the number of proposals submitted by institutions and by individuals, and after discussion, it was agreed that the discussion draft would remain silent on that issue. The committee will, however, address proposal limitations in the August 2008 response to Congress. Dr. Bowen reported that item five in Discussion Draft No. 4, which concerned annual updates of the IPAMM analysis for the Board and NSF, and be reworded to reflect that IPAMM, as a group, had completed its work. At the end of this discussion, it was agreed that a revised document will be circulated with the objective of bringing a final document to the February 2008 meeting for approval.

Task Force on Cost Sharing (CS)

Dr. Kelvin Droegemeier, CS chairman, reported on cost sharing discussions at three different NSF meetings: EPSCoR, Engineering Research Center (ERC), and Industry/University Cooperative Research Center (I/UCRC). (CS Charge, Board Book Tab 9A; and Materials

Distributed at EPSCoR and ERC Meetings, Board Book Tab 9B.) A roundtable on cost sharing would be held on December 7, 2007 at NSF. (Agenda and Participant List, Board Book Supplemental Materials Tab 4; Draft Cost Sharing Survey, Board Book Supplemental Materials Tab 5.)

Dr. Benbow raised the question of effort reporting and its linkage to cost sharing, and explained some of the difficulties associated with current effort reporting requirements. Dr. Droegemeier agreed that a full analysis of cost sharing required a discussion of effort reporting. In addition, the task force discussed the benefits of letters to Congress, Office of Management and Budget (OMB), and possibly others that summarize problems created by current effort reporting requirements. There was general agreement that such letters, in advance of any recommendations that might come from the task force, would be beneficial.

Dr. Beerling adjourned the Open Session at 2:15 p.m.



Ann A. Ferrante
Writer-Editor
National Science Board Office