

**APPROVED MINUTES¹
OPEN SESSION
409TH MEETING
NATIONAL SCIENCE BOARD**

National Science Foundation
Arlington, Virginia
May 13-14, 2009

Members Present:

Steven C. Beering, Chairman
Patricia D. Galloway, Vice Chairman
Mark R. Abbott
Dan E. Arvizu
Barry C. Barish*
Camilla P. Benbow
Ray M. Bowen
John T. Bruer
Kelvin K. Droegemeier
José-Marie Griffiths
Esin Gulari
Louis J. Lanzerotti
Alan I. Leshner
Douglas D. Randall
Arthur K. Reilly
Diane L. Souvaine
Jon C. Strauss
Kathryn D. Sullivan
Richard F. Thompson

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

Members Absent:

G. Wayne Clough
France A. Córdova
G. P. “Bud” Peterson
Thomas N. Taylor

¹ The minutes of the 409th meeting were approved by the Board at the August 2009 meeting.

* Consultant

The National Science Board (Board, NSB) convened in Open Session at 11:00 a.m. on Thursday, May 14, 2009 with Dr. Steven Beering, Chairman, presiding (Agenda NSB-09-37, Board Book page 269). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 1: Presentations by Honorary Award Recipients

The following made presentations to the Board:

- ◆ Dr. David Charbonneau, recipient of the 2009 Alan T. Waterman Award and Alan Thomas D. Cabot Associate Professor of Astronomy at Harvard University;
- ◆ Dr. Roald Hoffmann, recipient of the 2009 Public Service Award (Individual) and Frank H. T. Rhodes Professor of Humane Letters, Emeritus and Professor of Chemistry, Emeritus at Cornell University; and
- ◆ Dr. Mary Kirchoff, representing the American Chemical Society for the 2009 Public Service Award (Group) and Director of the Education Division of the American Chemical Society for Project SEED (Summer Experiences for the Economically Disadvantaged).

Dr. Beering adjourned this portion of the Open Session at 12:00 Noon.

The Board reconvened in Open Session at 1:00 p.m.

AGENDA ITEM 2: Presentation by Honorary Award Recipient

Dr. Mildred Dresselhaus, recipient of the Vannevar Bush Award and Institute Professor of Physics and Electrical Engineering at the Massachusetts Institute of Technology, made a presentation to the Board.

Dr. Beering adjourned this portion of the Open Session at 1:50 p.m.

The Board reconvened in Open Session at 2:25 p.m.

AGENDA ITEM 8: Approval of Open Session Minutes, February 2009

The Board unanimously APPROVED the Open Session minutes of the February 2009 Board meeting (NSB-09-28, Board Book page 301).

AGENDA ITEM 9: Chairman's Introduction and Report

In the Chairman's Introduction on Wednesday, May 13, 2009 and during the Chairman's Report of the Plenary Open Session on Thursday, May 14, 2009, Dr. Beering announced and reported on several items.

a. Welcome to NSF Inspector General

Dr. Beering introduced the newly appointed NSF Inspector General, Ms. Allison Lerner. Ms. Lerner joined NSF from the Department of Commerce where she acted as the principal legal advisor to the Inspector General and managed that agency's Office of Inspector General (OIG) staff attorneys and legal services. She received her law degree from the University of Texas, School of Law, and she is a member of the bar in both Texas and the District of Columbia.

b. NSB Office Staff Introduction

The Chairman welcomed back to the Board Office Lieutenant Colonel Keaven Stevenson, U.S. Army (Reserve), after more than 5 years of active duty. He returned to the Board Office as the Office Administrative Manager.

c. Election of Executive Committee Members

In Plenary Executive Closed Session, the Board elected Drs. Camilla Benbow and Ray Bowen to the Executive Committee for the 2009 – 2011 terms.

d. Board Meeting Calendar for 2010

As part of the annual business conducted each May, the Board reviewed the draft meeting schedule for the next calendar year. In developing these dates, the Board Office considered a variety of constraints during the year including statutory requirements and the availability of Board Members as well as the need for development and approval of future budgets. The meeting dates were selected so that no Board Member would miss more than two meetings while attempting to maximize attendance at each meeting.

The Board unanimously APPROVED the following schedule of meetings for calendar year 2010: February 3-4, May 4-5, August 25-26, and September 23-24.

The draft meeting dates for December 2010 created conflicts for some Board Members, and would be reviewed again at the Board meeting in August 2009.

e. Board Recognition of NSF Staff

Drs. Kelvin Droegemeier, Patricia Galloway, and Douglas Randall recommended that the Board review and approve a memorandum statement recognizing the tremendous efforts by the NSF staff under the pressures of the American Recovery and Reinvestment Act (ARRA) funding. Based on this recommendation, the Board acted as follows:

The Board unanimously APPROVED the statement to the entire NSF team in recognition of exceptional service to science and engineering and the Nation (NSB-09-49) (Appendix B).

Dr. Arden Bement, NSF Director, thanked the Board for the recognition of the NSF staff. He commented that the NSF staff is hard working, dedicated to its mission, and wonderful people to work with. He stated that this recognition would mean a great deal to the entire NSF team.

f. Annual Awards Dinner

Dr. Beering reported on the annual Awards Ceremony and Dinner at the Department of State's Diplomatic Reception Rooms, where the Board was honored to receive a message from President Barack Obama delivered by the Office of Science and Technology Policy (OSTP) Director, Dr. John Holdren. The annual event is an opportunity to recognize distinguished contributions of individuals and organizations to the advancement of science.

The following 2009 honorary award recipients were recognized:

- ◆ Dr. Mildred Dresselhaus, Institute Professor of Physics and Electrical Engineering at the Massachusetts Institute of Technology, received the Vannevar Bush Award for her outstanding contributions to the welfare of mankind and the Nation through public service in science and technology.
- ◆ Dr. David Charbonneau, Thomas D. Cabot Associate Professor of Astronomy at Harvard University, received the Alan T. Waterman Award for his outstanding capabilities and exceptional promise for significant future achievements.

The following received Public Service Awards for increasing public understanding of science and engineering:

- ◆ Dr. Roald Hoffmann, Frank H. T. Rhodes Professor of Humane Letters, Emeritus and Professor of Chemistry, Emeritus at Cornell University, received the individual Public Service Award.
- ◆ American Chemical Society's Project SEED (Summer Experiences for the Economically Disadvantaged) received the group Public Service Award.

Dr. Beering stated that it was an honor and a privilege to present these awards to such distinguished, talented, and creative people. An event such as the Awards Ceremony and Dinner requires a vast amount of planning, coordination, and a lot of hard work. On behalf of the Board, he thanked the Board Office and Foundation staff responsible for the smooth operation of this event.

g. Board Outreach

The Chairman announced that the following outreach efforts made since the February 2009 Board meeting:

- ◆ The report, *Building a Sustainable Energy Future*, was released for public comment on April 14, 2009. Dr. Dan Arvizu, the co-chairman of the Task Force on Sustainable Energy, gave a radio interview with Federal News Radio regarding the Board's report on April 17, 2009. He also gave a presentation on the report to the Council of Energy Research and Education Leaders on April 21, 2009.

- ◆ Outreach efforts were also conducted by Dr. Craig Robinson, Acting Executive Office and Board Office Director. In April 2009, he spoke to the Coalition for National Science Funding on behalf of the Board, and gave a presentation about NSB to OSTP staff on May 5, 2009.
- ◆ Dr. Beering gave a talk on STEM Education to the Council of Scientific Society Presidents (CSSP) on behalf of the Board on May 4, 2009. CSSP was particularly interested in the recommendation in the STEM Action Plan regarding coherence in the Nation's STEM education system.
- ◆ Dr. Jon Strauss, former chairman of the Task Force on International Science, testified before the Subcommittee on Research and Science Education, House Committee on Science and Technology on March 24, 2009, on the important topic of science diplomacy (Board Book page 313).

h. Committee Announcements

The Board Chairman discharged the *ad hoc* Committee for the Vannevar Bush Award with many thanks to Dr. Kathryn Sullivan, chairman, and Dr. John Bruer and Mr. Arthur Reilly, members.

He also discharged the *ad hoc* Committee on Nominating for NSB Elections with special thanks to Dr. Jon Strauss, chairman, and Drs. Douglas Randall and Thomas Taylor, members.

Lastly, he announced that the following Board Members will serve on the *ad hoc* Committee on NSB Nominations for the Class of 2010-2016: Dr. Alan Leshner, chairman, and Dr. Patricia Galloway and Mr. Arthur Reilly, members.

i. Board Member Recognition

Dr. Galloway, Vice Chairman, announced that congratulations were in order for Dr. Beering, President Emeritus of Purdue University, who would receive an honorary doctor of laws degree from the University of Notre Dame on May 17, 2009. His award would be one of eight degrees presented at the graduation ceremony, including an honorary doctor of laws degree given to President Obama. The recipients are “distinguished figures in academia, business, athletics, engineering, law, and philanthropy.”

Dr. Beering announced two honors bestowed on the NSF Director, Dr. Arden Bement. On April 20, 2009, Dr. Bement received the 2008 National Engineering Award at the American Association of Engineering Societies (AAES) 30th Annual Meeting. This award is presented for inspirational leadership and tireless devotion to the improvement of engineering education and to the advancement of the engineering profession.

Additionally, on May 8, 2009, the Government of Japan presented Dr. Bement with the “Order of the Rising Sun, Gold and Silver Star” for his meritorious contribution to promoting cooperation and understanding between the U.S. and Japan in the science and technology field. This Order is given to those who have made significant lifetime contributions in their fields. It is the second-highest order available to foreign citizens. He received the award at a ceremony at the Imperial Palace in Tokyo, followed by an audience with the Emperor; only the eighth time that an American has been so honored by the Court of Japan.

AGENDA ITEM 10: Director's Report

Dr. Arden Bement, Jr., Director of the National Science Foundation (Foundation, NSF), reported on the following items:

a. NSF Staff Introduction

Dr. Bement introduced Dr. Larry H. Weber as the new Director of the Office of International Science and Engineering (OISE) replacing Dr. Thomas Weber who retired in June 2008. Dr. Weber joined NSF from Texas A&M University in 1987 as Program Manager for the Japan, Australia and New Zealand Programs. He served as the Head of NSF's Tokyo Office from 1991 to 1996, and Program Manager for the Japan and Korea Program and the East Asia and Pacific Program. He received his Ph.D. degree in Biological Oceanography from Texas A&M University.

b. Congressional Update

The Director's congressional highlights were provided to Board Members (NSB-09-47, Board Book page 317) and he referred to the following recent hearings and legislation.

Hearings

On April 22, 2009, the House Small Business Committee held a hearing on the Importance of Technology in an Economic Recovery. Dr. Kesh S. Narayanan, Division Director, Industrial Innovation and Partnerships, Directorate for Engineering (ENG), testified for NSF.

On March 19, 2009, Dr. Cora Marrett, NSF Acting Deputy Director, testified for NSF at the House Science and Technology Subcommittee on Investigations and Oversight hearing on ARRA, entitled "Follow the Money: Accountability and Transparency in Recovery Act Science Funding."

On March 12, 2009, the Senate Committee on Commerce, Science and Transportation held a hearing on climate Science – "Empowering Our Response to Climate Change," and Dr. Timothy Killeen, Assistant Director, Directorate for Geosciences (GEO), testified for NSF.

Legislation

On April 29, 2009, the House Science and Technology Committee approved three bills that would expand science coordination efforts within the federal government and promote international technology cooperation: H.R. 1709, the STEM Education Coordination Act, H.R. 2020, the Networking and Information Technology Research and Development Act, and H.R. 1736, the International Science and Technology Cooperation Act.

AGENDA ITEM 11: Open Committee Reports

a. Executive Committee (EC)

Dr. Bement, EC chairman, recommended that the Board accept the 2008 Annual Report of the Executive committee, covering the period from May 2008 to April 2009 (Board Book page 61).

The Board unanimously ACCEPTED the 2008 Annual Report of the Executive Committee (NSB/EC-09-8) (Appendix A).

Dr. Bement also recommended Board approval of the Board Prioritization Process. He stated that the process was developed by the Executive Committee with input from the Board and NSF staff, and was discussed at the February 2009 Board meeting. EC noted the possible need for flexibility in the stated timeline, while recognizing the potential difficulty if there are delays. Dr. Robinson will work with committee chairmen if adjustments in the timeline are needed. Based on this recommendation, the Board acted as follows:

The Board unanimously APPROVED the National Science Board Prioritization Process (NSB/EC-09-11, Board Book page 63).

Lastly, Dr. Bement reported that he updated EC on the recruitment of assistant directors for the following Directorates: Social, Behavioral, and Economic Sciences (SBE); Biological Sciences (BIO); and Mathematical and Physical Sciences (MPS).

b. Committee on Audit and Oversight (A&O)

Dr. Dan Arvizu, A&O chairman, noted that the committee will follow up on the February 2009 threshold discussion at a future meeting.

Dr. Arvizu reported that the committee welcomed Ms. Lerner, the new Inspector General. She stated that she would work closely with the agency to broaden communications, and presented the March 2009 *Office of Inspector General Semiannual Report to Congress*. Dr. Joan Frye, NSF's Director's Office, discussed the draft NSF management response and data tables. The committee approved the management response, and recommended approval by the full Board.

The Board unanimously APPROVED the transmittal letter and management response to the March 2009 *Office of Inspector General Semiannual Report to Congress*.

Dr. James Lightbourne, Mr. Nick Proferes, and Ms. Beth Ann Velo presented the FY 2008 *Report to the National Science Board on the National Science Foundation's Merit Review Process*. The presentation included an overview of the report structure and highlighted new items as well as updates on trends concerning funding rates, award sizes, people supported by research grants, and review methods. A brief period of questions followed where potential future data topics were discussed, including those surrounding ARRA.

Mr. Thomas Cooley, NSF Chief Financial Officer, discussed the start of the FY 2009 Financial Statement Audit, follow up activities related to the FY 2008 Financial Statement Audit, and NSF's complex internal control process. He reported on NSF's plans to modernize the financial and property systems and integrate them into the core agency business processes. This work, called "iTRAK," short for "inside track," will also involve considerable investment and effort over the next few years. The payoff will be enhanced accountability for the agency. Lastly, Mr. Cooley discussed the impact and challenges of ARRA funding and accountability requirements on NSF and its awardees.

Mr. Sal Ercolano, partner-in-charge of NSF's financial statement audit, presented an overview of the planned FY 2009 audit. The auditors would revisit issues appearing in the February management letter including contract monitoring, grant processing, and property and equipment accounting. ARRA will introduce a 50 percent increase in volume during the second half of the year, and concern was expressed about NSF's ability to process awards in a short period of time while monitoring grantee compliance with new and existing reporting requirements. Mr. Ercolano noted NSF's upcoming IT security review, which will emphasize testing of the U.S. Arctic Program (USAP) system controls.

c. Committee on Education and Human Resources (CEH)

Dr. John Bruer, CEH chairman, reported that Dr. Camilla Benbow updated the committee on the forthcoming "Expert Panel Discussion on Preparing the Next Generation of STEM Innovators," which will be held on August 24-25, 2009 at NSF (Agenda [NSB/CEH-09-6](#), Board Book page 93).

The committee spent the remainder of the meeting discussing CEH priorities for action during the coming year, focusing on providing statements to EC by the proposed May 31, 2009 deadline. To stimulate this discussion, CEH heard a presentation from Dr. Wanda Ward, Assistant Director (Acting), Directorate for Education and Human Resources (EHR), on "Meeting Education and Workforce Needs in Emerging STEM Areas." This is one of four overarching topics receiving enhanced focus within NSF's education investment portfolio with teacher education, broadening participation, and cyberlearning being the other three emphasis areas.

In her presentation, Dr. Ward outlined some of the recurring drivers and cross-cutting themes involved with addressing these emerging areas. She commented on NSF's critical role as a leader in responding to recent community-based reports that have identified the education and workforce needs and issues associated with emerging multidisciplinary fields. She also noted the important role of community colleges as incubators for diverse STEM talent that serves both the professional and technical workforce needs. Dr. Ward stated that EHR was well-positioned to capitalize on strong partnerships with NSF's research directorates to effectively respond to these needs, but would also welcome input from the Board in shaping the strategic and tactical directions that would most effectively serve the community.

Dr. Bruer reported that two main topics emerged during the committee's discussion for priorities for the coming year: (1) Dr. G. Wayne Clough emphasized the shifting boundaries between formal and informal learning and the potential of cyberinfrastructure and the net to foster a kind

of third-track between formal and informal STEM education. Dr. Benbow stated the importance of having a larger framework of learning goals to provide context and structure for individual teacher and student experiences with STEM education facilitated through such environments; (2) Strategic planning for future investments in NSF's STEM education and workforce portfolio. The four topics identified in Dr. Ward's presentation were considered near-term priorities for EHR with implications for allocation of resources. Work is underway to develop a coherent framework for packaging these issues as a budget priority, and it was agreed that this would be an excellent topic for CEH.

At the suggestion of Dr. Sullivan, the committee agreed that an appropriate CEH priority would be to help develop a decadal strategic plan for NSF education investments similar to what might be undertaken for a large infrastructure program. Ideally, while this decadal plan would look retrospectively at what EHR has supported in the past, significant focus would also be given to identifying optimal areas for future investments. Dr. Marrett reminded the committee that this enterprise was broader than EHR, given that large investments in STEM education are carried out within the research directorates, and that the CEH decadal plan should look more comprehensively across NSF.

d. Committee on Science and Engineering Indicators (SEI)

Dr. Louis Lanzerotti, SEI chairman, reported that the meeting was devoted to discussion of the Board Member and expert reviews of the draft chapters for *Science and Engineering Indicators (Indicators) 2010*.

He expressed his appreciation, and that of the Division of Science Resource Statistics (SRS) staff, to all the Board Members and outside experts who provided highly substantive comments and suggestions to *Indicators*. Dr. Lanzerotti also thanked the SRS staff for all their efforts.

The committee discussed three possible topics for the Companion Piece policy document to accompany the 2010 *Indicators* ([NSB/SEI-09-6](#), Board Book page 115). The committee approved the topic "Globalization of Science and Engineering Research" for the 2010 Companion Piece, and recommended approval by the full Board.

The Board unanimously APPROVED the topic, "Globalization of Science and Engineering Research," for the 2010 Companion Piece.

Dr. Lanzerotti reported that Drs. Ray Bowen, Patricia Galloway, José-Marie Griffiths, Jon Strauss, and Mr. Arthur Reilly volunteered to work with him and the Board Office to prepare the drafts of the Companion Piece.

Finally, Mr. Rolf Lehming, SEI Executive Secretary and SRS Director for the Science and Engineering Indicators Program, SBE, updated the committee on the status of the 2010 *Digest of Key Indicators*. He noted that Board Members had previously reviewed five Digest stories. Dr. Lanzerotti asked SRS to prepare a sixth "story" on the globalization of the overall science and technology enterprise, which will be vetted by the *ad hoc* Digest working group. He stated that the story will provide supportive information for the Companion Piece, which contains policy discussions and recommendations. In addition to Dr. Lanzerotti, the *ad hoc* Digest

working group consists of Drs. Arden Bement, G. Wayne Clough, Esin Gulari, and Alan Leshner.

e. Committee on Programs and Plans (CPP)

Dr. Kelvin Droegemeier, CPP chairman, reported that the committee heard six information reports. Dr. Joy Pauschke, Program Director, Division of Civil, Mechanical, and Manufacturing Innovation, ENG, presented an information item on the status of the recompetition for Network for Earthquake Engineering Simulation (NEES) Operations. NEES is a national network of 15 large-scale experimental facilities that feature advanced tools to learn how earthquakes and tsunamis impact infrastructure and other critical components of today's society. A third-year annual review of NEES found that operations for the second 5-year period should be recompeted. ENG was expected to bring an action item before the Board at the August 2009 meeting, focusing on a cooperative agreement for NEES operations from 2010 to 2014. CPP expressed concern regarding the late notice of the need to recompute the operations, noting the requirement that actions come before the Board no later than 6 months prior to the termination of a current cooperative agreement. This is especially true given that NEES is a Major Research and Equipment Facilities Construction (MREFC) project. To ensure that the Board has due process, while not impeding progress in science, CPP will further review this matter.

Dr. Tony Chan, Assistant Director, MPS, and Dr. Zakya Kafafi, Division Director, Division of Materials Research, MPS, presented an update on the Award for Coherent Light Source (CLS) Development. NSF was expected to bring an action before the Board in August 2009. At the February 2009 meeting, the Board was informed that the NSF Advisory Panel on Light Source Facilities had concluded that NSF should play a stewardship role in the design, construction, and operation of the fourth generation light source facilities. The Division of Materials Research (DMR) planned to support site-independent and technology-neutral research and development for CLS, contingent upon the availability of existing infrastructure, which includes the two NSF-supported facilities that have been in operation for more than 20 years. DMR was reviewing proposals for the renewal of the existing infrastructure, and MPS was expected to bring an action before the Board at its August 2009 meeting regarding a funding recommendation.

Dr. Tony Chan and Dr. Jon Kotcher, Program Director, Division of Physics, MPS, presented an update on the progress of the design for the Deep Underground Science and Engineering Laboratory (DUSEL). The first annual NSF review of the DUSEL Design Project took place in January 2009 to assess all aspects of the project. The 25-member panel made recommendations that were in the process of being reviewed by NSF. MPS was expected to bring an action item before the Board in August 2009, focusing on a Cooperative Agreement for DUSEL design that will lead to a Preliminary Design Review (PDR) targeted for December 2010.

Dr. Tony Chan and Dr. Colby Foss, Program Director, Division of Chemistry, MPS, presented an information item on the ARRA Award for the Purchase of a 21 Tesla Magnet. The project aims to acquire a 21 Tesla superconducting magnet that will be added to the fleet of user-accessible instrumentation and enable the efficient characterization of large biomolecules and their assemblies as well as a number of other important scientific activities. The development of this magnet was strongly advised by a joint NSF and Department of Energy workshop in January 2008. MPS was reviewing proposals for the project and expects to formulate a plan during the

next several months. NSF was expected to bring an action item before the Board at the August 2009 meeting.

Dr. Jose Munoz, Deputy Director, Office of Cyberinfrastructure (OCI), presented an information item on the TeraGrid Extension Award. The current TeraGrid award would end in March 2010. The TeraGrid Extension is required to continue operations and support from April 2010 to March 2011. The TeraGrid Extension proposals will be reviewed by a panel of experts in May 2009. OCI planned to bring an action item before the Board with an award recommendation for the TeraGrid Extension at the August 2009 meeting.

Dr. Lance Haworth, Head, Office of Integrative Activities (OIA), presented an information item on the Academic Research Infrastructure (ARI)/Major Research Instrumentation (MRI) Programs. The MRI Program supports the acquisition and development of major research instruments. The ARI program supports the repair or renovation of existing research facilities. The \$300 million in ARRV funding for MRI will add new opportunities for acquisition and development of the mid-scale instruments up to \$6 million, and will achieve the goal of significantly higher success rates. The ARI Program, which ended with the 1996 solicitation, is different than MRI as it supports repair or renovation of existing research facilities, and for that particular program \$200 million in ARRA funding is available.

Finally, CPP discussed issues raised for committee consideration in FY 2009 and beyond. CPP will hold a teleconference in May 2009 to discuss, consolidate, and revise recommendations to provide to EC.

CPP Subcommittee on Polar Issues (SOPI), Dr. Strauss, chairman

Dr. Michael van Woert, Executive Officer, Office of Polar Programs (OPP), briefly described the rescue of a contractor employee who became disoriented in severe weather a few miles from Summit Station. The contractor had been missing for 56 hours. Mr. Simon Stephenson, Division Director, Division of Arctic Sciences, OPP, presented a brief overview on international partnerships in the Arctic. Dr. Scott Borg, Division Director, Antarctic Sciences, OPP, summarized Antarctic science highlights from the 2008-2009 austral summer. Additionally, Mr. Lawrence Rudolph, NSF General Counsel, provided an update on domestic Antarctic liability legislation relating to Annex VI to the Antarctic Treaty Protocol.

CPP Task Force on Sustainable Energy (SE) - Drs. Arvizu and Strauss, co-chairmen

SE discussed the report, *Building a Sustainable Energy Future* (NSB-/CPP/SE-09-1), which was released for public review and comment for the period April 14 - May 1, 2009. Task force co-chairmen summarized the public comments received and the subsequent revisions to the draft report based on those comments. Draft report revisions highlighted the need for a more concerted energy efficiency and public action strategy and improved public-private partnerships in sustainable energy research, development, demonstration, deployment, and education (RD3E).

CPP approved the final report, *Building a Sustainable Energy Future: U.S. Actions for an Effective Energy Economy Transformation* (NSB-09-55), and recommended the report for full Board approval, subject to additional comments from Board Members and final approval by the task force co-chairmen, CPP chairman, and the Board Chairman.

The Board unanimously APPROVED the final report, *Building a Sustainable Energy Future: U.S. Actions for an Effective Energy Economy Transformation (NSB-09-55)*, subject to additional comments from Board Members and final approval by the task force co-chairmen, CPP chairman, and the Board Chairman.

Dr. Beering thanked Drs. Arvizu and Strauss for a tremendous job on this report, which is intended to be helpful to this Administration.

f. Committee on Strategy and Budget (CSB)

Mr. Arthur Reilly, CSB chairman, reported that Mr. Cooley discussed the status of long-range planning information, and noted the information was provided to the Board in a new format that was intended to be helpful in preparation for the FY 2011 budget.

Dr. Bement provided the committee with an update on the FY 2009 Appropriation and a brief update on the ARRA funding. Dr. Bement provided the committee with summary information about the FY 2010 budget request. The summary information will be available on the NSF Web site on May 14, 2009, and detailed information will be posted on the NSF Web site on May 18, 2009. The request provides an increase of 8.5 percent over the FY 2009 current plan. NSF was included in the President's Plan for Science and Innovation, and the NSF budget is on course to double by 2016.

Mr. Reilly also reported that Dr. Bement identified the major themes and priorities of the 2010 budget, which include transformative research, climate change, clean energy, new faculty and young investigators, graduate fellowships, Cyber-enabled Discovery and Innovation, and Science and Technology Centers. Additionally, Dr. Bement presented the details broken down by account and strategic goals. He also noted that the significant amount of ARRA funds provided in the 2009 in the area of MREFC projects allows greater funding flexibility in research and education support in the 2010 request. The President's strong focus on science and innovation will benefit research and engineering communities, and the NSF FY 2010 Budget Request positions the agency well to support this effort.

Lastly, CSB heard presentations from Dr. James Collins, Assistant Director, BIO, and Dr. Thomas Peterson, Assistant Director, ENG, on how their directorates plan to strategically invest ARRA funds in FY 2009.

g. Task Force on the NSB 60th Anniversary (60ANN)

Dr. Patricia Galloway, 60ANN chairman, reported on the progress of plans for the 60th anniversary activities. Dr. Marrett formed the NSF 60th Anniversary Working Group, with co-chairmen, Mr. John Tsapogas and Ms. Tracy Gorman. This group will work closely with 60ANN in planning a variety of celebratory activities and events. Since the meeting of the task force in December 2008, there were several changes to the original 60th Anniversary plans as a result of a new Administration, the continuing economic crisis, and staff tasks associated with ARRA funding. Dr. Galloway explained that a more circumspect approach was needed and original expectations for the 60th Anniversary commemoration were scaled-down.

The NSF working group submitted a proposal to the American Association for the Advancement of Science (AAAS) for a panel discussion to include the current and past NSF Directors to speak at the annual AAAS meeting in February 2010. The panel discussion is entitled, "The Future of the National Science Foundation on its 60th Anniversary," and the working group would hear from AAAS regarding proposal acceptance in July 2009. Dr. Galloway was asked to serve as the moderator for this panel. If the proposal is accepted, the task force will plan the AAAS panel event in *lieu* of the half-day symposium that was originally proposed. If the AAAS proposal is not accepted, then each NSF directorate would proceed to identify researchers, using the selection criteria established in December 2008, for a possible symposium.

The NSF working group was also looking into inviting President Obama to speak to the NSF staff, and will consider various options and dates for this event.

The Office of Legislative and Public Affairs (OLPA) met with the NSB Office and offered its assistance in compiling the "Sensational 60" great ideas and achievements over the past 60 years as well as working with the NSF historian to compile a list of significant NSB highlights in the past 10 years. A number of other Washington-based efforts were discussed, including:

- ♦ asking Congress to pass a joint resolution honoring NSB and NSF,
- ♦ developing a letter to be co-signed by congressional supporters and entered into the Congressional Record with copies framed for each NSB Member,
- ♦ obtaining a letter of proclamation from President Obama or OSTP congratulating NSB and NSF,
- ♦ having a flag flown over the Capitol to commemorate the 60th Anniversary and frame it in the NSB Office, and
- ♦ arranging for a possible reception on Capitol Hill.

The task force discussed how to solicit ideas for NSF's "Sensational 60" great achievements as well as NSB accomplishments. The task force will consider the possibility of a Web site as one means of informing the community and encouraging suggestions. Task Force members offered ideas including the use of commemorative flags for various purposes, inviting current and past NSF Directors to remark on NSF achievements, and review past achievements that have influenced the present and future of science and discovery.

Dr. Galloway thanked Dr. Marrett for her efforts on the NSF 60th Anniversary Working Group; OLPA for assistance thus far; and Ms. Ann Ferrante, 60ANN Co-Executive Secretary, for coordinating these endeavors.

Dr. Beering adjourned the Open Session at 3:10 p.m.

[signed]
Ann A. Ferrante
Executive Secretary
National Science Board

Attachments:

Appendix A: NSB/EC-09-8, National Science Board, 2008 Annual Report of the Executive Committee

Appendix B: NSB/-09-49, Memorandum to the Entire National Science Foundation Team, Recognition of Exceptional Service to Science and Engineering and the Nation

**2008 Annual Report of the Executive Committee
National Science Board**

In accordance with the requirements of 42 U.S.C. § 1865 (d), I hereby submit this annual report of the National Science Board (Board, NSB) Executive Committee, as approved at the Executive Committee meeting on May 13, 2009. This report covers the period from May 2008 through April 2009. I served as Director of the National Science Foundation and the Board's Executive Committee chairman during the above time period.

The elected Board membership of the Executive Committee during the past year was as follows:

Mark R. Abbott
Steven C. Beering
Patricia D. Galloway
Kathryn D. Sullivan ²

The following served as Executive Secretary of the Executive Committee: from May to August 2008, Craig R. Robinson, Acting NSB Executive Officer; from August 2008 to April 2009, Clifford J. Gabriel, Acting Executive Officer, Mathematical and Physical Sciences Directorate.

The Executive Committee met 5 times during this period (May 2008, August 2008, December 2008, February 2009, and March 2009) at the National Science Foundation in Arlington, Virginia. Oral reports of its activities were made at meetings of the full Board and are reflected in the minutes of those meetings. The March 2009 meeting was a teleconference and was held in closed session.

The Executive Committee's powers and functions are based on a delegation of authority to it by the Board according to 42 U.S.C. § 1865(a). The Board's current delegation to the Executive Committee (Attachment B to NSB-99-158) authorizes the Executive Committee to approve awards on behalf of the Board when an immediate decision is required between Board meetings and when the necessary action is not within the authority of the Director of the National Science Foundation. The March 2009 meeting was the only occurrence during this time period where the Executive Committee acted on behalf of the Board.

/s/
Arden L. Bement, Jr.
Chairman
Executive Committee

² Dr. Sullivan served on the Executive Committee for the May 2008 meeting as National Science Board Vice-Chair. She was not re-elected to the Executive Committee until the August 2008 meeting. Therefore, Dr. Sullivan was not a member of the Executive Committee during the August 2008 meeting.

MEMORANDUM TO THE ENTIRE NATIONAL SCIENCE FOUNDATION TEAM

FROM: The National Science Board

SUBJECT: Recognition of Exceptional Service to Science and Engineering and the Nation

The National Science Board recognizes that you all are critical to the success of meeting the National Science Foundation's mission. Under normal circumstances you meet the enormous challenges involved in the whole process of funding research and its related activities, and this is often overlooked or not fully appreciated by the broader science and engineering community.

The Board also recognizes that you are now putting forth extraordinary effort to meet the monumental task required to deal with an almost doubling of work load with no additional help. We realize this takes extra dedication - you already are incredibly dedicated to the Foundation's mission. The Board recognizes this effort and we appreciate it and wish to thank you in advance for stepping up to meeting the opportunity the American Recovery and Reinvestment Act funds are providing.

Thank you all.

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*Consultant