

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the February 3-4, 2010 Meeting

The major actions and approvals of the National Science Board (Board, NSB) and a preliminary summary of the proceedings at the Board's February 2010 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the February 2010 meeting will be posted on the Board's public Web site (<http://www.nsf.gov/nsb/>) following Board approval at the May 2010 meeting.

1. Major Actions and Approvals at the 413th NSB Meeting (not in priority order):

- a. The Board authorized the NSF Director, at his discretion, to make an award for IceCube maintenance and operations 2010, University of Wisconsin - Madison.
- b. The Board authorized the NSF Director, at his discretion, to make an award for an increase in the contract ceiling for the NSF contract with CH2M Hill for Arctic logistics in support of research.
- c. The Board authorized the NSF Director, at his discretion, to make an award for final pre-construction activities for the National Ecological Observatory Network (NEON) Project, NEON, Inc.
- d. The Board approved the recipient for the 2010 Alan T. Waterman Award. The name of the awardee will be announced after he/she has been notified.
- e. The Board approved the revised charge to the Expert Panel Discussion on Preparing the Next Generation of STEM Innovators, extending the final NSB approval date for the report to May 2010, with publication of the report by the summer of 2010.
- f. The Board elected the following Board Members to the *ad hoc* Committee on Nominating for NSB Elections, informally known as the Elections Committee: Dr. Alan Leshner, chairman, and Drs. Kelvin Droegemeier, Esin Gulari, and Douglas Randall, members.
- g. The Board Chairman established the Task Force on Merit Review: Dr. Alan Leshner, chairman, and Drs. Ray Bowen, John Bruer, Esin Gulari, Louis Lanzerotti, Douglas Randall, Diane Souvaine, and Thomas Taylor, members. NSF Liaisons are Dr. Lance Haworth and Dr. Timothy Killeen.
- h. The Board Chairman established the CSB Task Force on Data Policies: Dr. José-Marie Griffiths, chairman, and Drs. Mark Abbott, Camilla Benbow, Bud Peterson, Diane Souvaine, Thomas Taylor, and Mr. Arthur Reilly, members.

- i. The Board Chairman established the CPP Task Force on Support of Mid-Scale and Multi-Investigator Research: Dr. Droegemeier, chairman, and Drs. Mark Abbott, Esin Gulari, Diane Souvaine, and Thomas Taylor, members.
- j. The Board Chairman discharged the CPP Task Force on Sustainable Energy with thanks to Drs. Dan Arvizu and Jon Strauss, co-chairmen, and Drs. Mark Abbott, Camilla Benbow, John Bruer, José-Marie Griffiths, Elizabeth Hoffman, Douglas Randall, and Mr. Arthur Reilly, members.
- k. The Board Chairman discharged the CSB Task Force on Cost Sharing with thanks to Dr. Kelvin Droegemeier, chairman, and Drs. Mark Abbott, Camilla Benbow, Jon Strauss, Thomas Taylor, and Richard Thompson, members.
- l. The Board approved the minutes of the Plenary Open Session (NSB-09-102) for the December 2009 meeting (<http://www.nsf.gov/nsb/meetings/2009/1209/minutes.pdf>). Minutes for the Plenary Executive Closed (NSB-09-100) and Closed (NSB-09-101) Sessions for the December 2009 meeting of the Board were also approved.
- m. The Board approved a resolution to close portions of the upcoming May 4-5, 2010 Board meeting dealing with staff appointments; future budgets, honorary awards; grants and contracts; specific Office of the Inspector General investigations and enforcement actions; and National Science Foundation (NSF) participation in a civil or administrative action, proceeding, or arbitration (<http://www.nsf.gov/nsb/meetings/2010/0504/closing.pdf>) (NSB-10-9).

2. Board Chairman's Report

Dr. Steven Beering, NSB Chairman, reported on upcoming events and special dates. On January 5-6, 2010, he and Drs. Griffiths and Souvaine attended events to honor outstanding STEM educators and mentors. Recipients of the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) and the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM) were honored. Both programs are administered by NSF for the White House. Drs. Beering and Souvaine attended a discussion of the groups with Secretary of Education, Mr. Arne Duncan, and the President's Science Advisor, Dr. John Holdren. Earlier that day, Dr. Beering attended the President's announcement at the White House to add public-private investments of more than \$250 million in STEM education.

On February 1, 2010, Dr. Beering reported that he and Dr. Arden Bement, NSF Director, participated in the rollout of the NSF FY 2011 Budget Request to Congress. Dr. Beering also reported that he would speak at the Science and Technology Centers Awards Ceremony at NSF on February 5, 2010. Dr. Beering also announced that February 8, 2010 is the deadline for submitting nominations for the National Board for Education Sciences (NBES), which is an advisory body to the Director for the Institute of Education Sciences (IES) at the Department of Education. He was asked by the White House Office of Presidential Personnel to submit names and resumes of potential candidates and requested that nominations from Board Members be forwarded to Dr. Craig Robinson, Acting NSB Executive Officer.

Dr. Beering also announced that he was scheduled to testify before the House Committee on Appropriations, Subcommittee on Commerce, Justice, and Science on February 10, 2010. [*This was cancelled due to weather.*] Additionally, he was slated to be back on Capitol Hill to provide testimony to the House Committee on Science and Technology, Subcommittee on Research and Science Education on March 10, 2010. Both testimonies will be on the NSF FY 2011 Budget Request.

In Plenary Executive Closed Session, the Board approved the awardee for the 2010 Alan T. Waterman Award. The award will be presented at the annual May Dinner. (See 1.d.)

The Board Chairman also made several announcements relating to committees. (See 1.f. – 1.k.)

Dr. Beering introduced Mr. Blane Dahl, who joined the Board Office as a Science Policy Analyst in January 2010.

3. NSF Director's Report

Dr. Arden Bement, Jr. introduced Dr. Bette A. Loiselle, who began serving her Limited Term Senior Executive Service appointment as Director, Division of Environmental Biology (DEB), Directorate for Biological Sciences (BIO) on January 31, 2010.

Dr. Bement also reported that NSF will soon announce five new Science and Technology Center (STC) awards as a result of a recent competition. The STC program supports integrative partnerships that require large-scale, long-term awards to produce research and education of the highest quality. These five new STCs will involve world class teams of researchers and educators, integrate learning and discovery in innovative ways, tackle complex problems that require the long-term support afforded by this program, and lead to the development of new technologies with significant impact well into the future.

Dr. Bement reported that researchers and officials across a range of programs and agencies began coordinating efforts within hours of the earthquake in Haiti on January 12, 2010. This included coordination between NSF and the U.S. Geological Survey (USGS), in addition to other National Earthquake Hazards Reduction Program (NEHRP) agencies. When the earthquake struck Haiti, NSF rapid-response resources were already in place through the ongoing support of such organizations as the Geo-engineering Extreme Events Reconnaissance (GEER) Association, the Earthquake Engineering Research Institute and its decades-long Learning from Earthquakes program, and the Natural Hazards Center at the University of Colorado, Boulder.

Lastly, the Director reported on the following congressional highlights. The House Committee on Science and Technology started the process of reauthorization of the America COMPETES Act by holding a series of hearings. Dr. Joan Ferrini-Mundy, Acting Assistant Director, Directorate for Education and Human Resources (EHR), testified at a hearing on February 4, 2010 on the current state of undergraduate and graduate education in STEM fields. Additionally, a number of upcoming hearings related to the FY 2011 budget were scheduled: February 10, the House Committee on Appropriations, Subcommittee on Commerce, Justice, and Science will review NSF's budget request; on March 3, the Senate Commerce Subcommittee on Science and Space will hold a hearing on the science and technology budget, and Dr. Bement along with the Office of

Science and Technology Policy (OSTP) and the National Institute of Standards and Technology (NIST) will testify; and on March 10, Drs. Bement and Beering will testify before the House Subcommittee on Research and Science Education on NSF's budget request.

4. Board Committee Reports

a. Executive Committee (EC)

Dr. Bement provided an update on the President's FY 2011 budget request. He noted that the request includes an 8 percent increase for NSF, and he provided information on increases for specific program areas and accounts. The request includes a 9.7 percent increase in the Agency Operations and Award Management (AOAM) account, which is crucial to the continued health of the organization. The NSB and the Office of Inspector General (OIG) also received necessary increases. Dr. Bement also discussed the status of Assistant Director recruitments for BIO, the Directorate for Mathematical and Physical Sciences (MPS), and that of the NSF Chief Financial Officer (CFO). Lastly, Dr. Bement proposed a strategy for NSB review and approval of the revised NSF Strategic Plan.

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

At the A&O meeting, there were the following presentations: Ms. Martha Rubenstein, the Acting CFO, gave an update on action being taken to address the significant deficiency contracts management finding in the 2009 audit and on the status of the Antarctic support contract recompetition. Mr. John Lynskey, Deputy Division Director, Division of Financial Management (DFM), reported on the success NSF has had in obtaining quarterly reports from thousands of NSF American Recovery and Reinvestment Act (ARRA) grantees. Ms. Shirl Ruffin, Deputy CFO, reported on the planning activities underway to make a new financial and property system. Ms. Allison Lerner, NSF Inspector General, discussed the OIG's most recent ARRA efforts, and briefed the committee on two recently closed OIG investigations. Dr. Larry Weber, Director, Office of International Science and Engineering (OISE), provided a report on NSF actions to support research integrity in an international context.

c. Committee on Education and Human Resources (CEH)

The committee reviewed the latest draft of the STEM Innovators report, discussed the milestones and timeline to complete the report, and agreed to present a motion to the Board to adjust the charge and workplan so that the final NSB approval for the report would be in May 2010 with publication to follow in summer 2010. The report would be sent to the expert panelists for review instead of releasing it for full public comment. *[The full Board subsequently approved the revised charge.]* (See 1.e.)

CEH also had an exchange of perspectives and discussion on STEM education research. The informal panel was composed of Dr. John Easton, IES Director; Mr. Jon Baron, NBES Vice Chairman; Ms. Norma Garza, NBES Executive Director; Dr. Bement, a member of both NBES and NSB; and Dr. Joan Ferrini-Mundy, Acting EHR Assistant Director.

d. Committee on Science and Engineering Indicators (SEI)

The committee heard accounts of the rollout of *Science and Engineering Indicators 2010 (Indicators)* and of follow-up activities, including briefings to staff in Congress and OSTP. Reports on public reactions relating to *Indicators* and the Digest were also presented.

Plans for a second rollout on February 19, 2010 during the Annual Meeting of the American Association for the Advancement of Science (AAAS) in San Diego were also described. NSB will release the Companion Piece to *Indicators* and the Web State Indicators chapter at the AAAS. The committee will be asked to review a Web-based interactive tool that will include indicators of particular interest to the education community. Board Members discussed possible outreach activities to increase use of *Indicators* data by various communities, including the education research and practice community, state policymakers, business and industry, and international science and engineering development organizations.

e. Joint Committee on Programs and Plans and Committee on Strategy and Budget (Joint CPP-CSB)

The Joint CPP-CSB met to review the portfolio of NSF facilities. Dr. Cora Marrett, Acting NSF Deputy Director, and Dr. Mark Coles, Deputy Director, Large Facilities Office, provided a presentation on the NSF Facility Plan. The presentation summarized the assessment process NSF uses to evaluate candidate projects for future construction, the current facility portfolio, and future areas of scientific interest for facilities. NSF's planning process was compared with the National Aeronautics and Space Administration (NASA) and the Department of Energy (DOE) facility planning processes, noting similarities and divergences. Board Members commented that the Major Research Equipment and Facilities Construction (MREFC) process has improved, yet certain design decisions and the impact they have on operations costs could be better evaluated and integrated in the process. International partnerships were noted as adding to the complexity associated with facilities management. A proposed change of adding a teleconference in January to the "Annual Timeline for Integration of the Board's MREFC Process with the NSF Budget Process" ([NSB/ CPP-10-11](#)) was approved.

f. Committee on Programs and Plans (CPP)

The committee discussed proposed changes to the current policy on award thresholds. The committee chairman asked A&O to work jointly with CPP to determine whether thresholds should be changed. Dr. Droegemeier asked for a brief update on the cost sharing policy, and present NSF staff was able to provide information. The Board's Task Force on Cost Sharing wrote a report recommending a comprehensive set of policy changes, which was released to NSF and the public in August 2009. NSF has since been working on implementation. The NSF Policy Office will be bringing recommendations to agency management.

The committee heard a number of reports on information items. Dr. Edward Seidel, Acting MPS Assistant Director, presented an update on the Access to LIGO Data by the broader community. The LIGO project has been responsive to feedback, and a data management plan to NSF is anticipated within a year. Dr. Seidel also gave an update on the preliminary design effort for the Deep Underground Science and Engineering Lab (DUSEL). He informed the committee that the design and development of potential DUSEL experiments are underway, and the National

Academy has initiated an independent review, which will culminate in a February 2011 report. The Joint Oversight Group between DOE and NSF signed an agreement in December 2009 that outlined the joint responsibilities for the facility, and OSTP is also now engaged to help guide the joint planning process.

Additionally, Dr. Seidel presented an update on NSF's Cyberinfrastructure Vision for the 21st Century ([NSF-07-28](#)). Dr. Seidel gave an overview of how science is being revolutionized by cyber-infrastructure and how NSF is preparing to respond to this new driver. The Office of Cyberinfrastructure (OCI) and the Directorate for Computer and Information Science and Engineering (CISE) are taking lead roles, although all NSF units are involved. The community is engaged in the planning for this new cyberinfrastructure vision, and NSF will keep the Board updated on the status of these efforts.

Dr. Sarah Ruth, Program Coordinator in the Division of Atmospheric and Geospace Sciences (AGS), Directorate for Geosciences (GEO), presented an update on the National Center for Atmospheric Research (NCAR) partnership with the University of Wyoming for the Wyoming Supercomputing Center. In May 2008, the Board approved a 5-year award to University Corporation for Atmospheric Research (UCAR) for management and operations of NCAR, which addressed power and space limitations for the growth of computing at NCAR, but did not include funding for relocation. The project will undergo a Final Design Review in March 2010, and NSF anticipates bringing an action item before the Board at the May 2010 meeting regarding increased award authorization to fund the construction of the new facility.

Dr. Seidel and Dr. Guebre Tessema, Program Director, MPS Division of Materials Research (DMR), presented an information item on the National High Magnetic Field Laboratory (NHMFL). The Board reiterated its existing policy on recompetition for all awards and asked the Board Executive Officer to work with the Office of the Director, including the NSF Deputy Director, to ensure that this policy is being followed.

Dr. Craig Foltz, Acting Division Director, MPS Division of Astronomical Sciences (AST), presented an update on the cooperative agreement for the management and operations of the Gemini Observatory. In December 2009, the United Kingdom communicated its decision to withdraw from the Gemini partnership in 2012, which will result in an approximately 25 percent cut in the annual Gemini maintenance and operations and instrumentation budget. NSF expects to bring an action item to extend the current cooperative agreement before the Board at the August 2010 meeting. The program has committed to recompetition of Gemini management in mid-2013.

Dr. Henry Blount, Head, Experimental Program to Stimulate Competitive Research (EPSCoR) Office, presented an information item on recent changes to the EPSCoR, and alerted the Board to award recommendations coming to the May 2010 NSB meeting. The program expects to bring up to 14 EPSCoR action items before the Board at the May 2010 meeting.

Dr. Stephen Meacham, Senior Staff Associate, Office of Integrative Activities (OIA), presented an update on the Academic Research Infrastructure (ARI), Recovery and Reinvestment (ARI-R2) program. ARI-R2 is intended to repair or renovate existing research/research training facilities. The program is currently in the process of award negotiations. NSF expects to bring an award recommendation before the Board at the May 2010 meeting.

In CPP Closed Session, CPP considered one action item and forwarded it to the full Board with recommendation for approval: Award for Final Pre-Construction Activities for the NEON Project. *[The full Board subsequently approved the award resolution.]* (See 1.c.)

CPP Subcommittee on Polar Issues (SOPI)

In Open Session, Dr. Karl Erb, Director, Office of Polar Programs (OPP), described a number of recent activities in the Antarctic including the dedication of a joint New Zealand/U.S. wind farm designed to provide 100 percent of Scott Base's and 10 percent of McMurdo Station's electricity requirements. Dr. Erb also reported on the beginning of the only nuclear power plant to operate in Antarctica, and recent visits by congressional staff members. Dr. Erb described plans to convene an external panel to identify infrastructure and logistics support that will be required to meet the evolving frontiers of Antarctic research over the next 2-3 decades, and he invited NSB input on terms of reference for the study. Additionally, Ms. Dana Topousis, Office of Legislative and Public Affairs (OLPA), reported on a successful recent media expedition to Antarctica that included representatives from a wide variety of media types, including newspapers, magazines, radio, TV, and the internet.

In Closed Session, SOPI considered two action items and forwarded both to CPP and the full Board with recommendation for approval: (1) Award for IceCube Maintenance and Operations 2010, University of Wisconsin, Madison; and (2) Extension of Contract Ceiling for the NSF Contract with CH2M Hill for Arctic Logistics in Support of Research. *[CPP and the full Board subsequently approved the award resolutions.]* (See 1.a. – 1.b.)

g. Committee on Strategy and Budget (CSB)

Dr. Bement presented an update on the FY 2010 Appropriation noting that it was signed by the President with a funding level 2 percent below the original request. Board Members expressed concern about the AOAM account, which received a funding level 6 percent below the request level. Dr. Bement also provided an overview of the FY 2011 Budget Request to Congress, released on February 1, 2010, for \$7.4 billion, an 8 percent increase over the FY 2010 Appropriation.

Dr. Marrett provided a report on NSF's expenditure of ARRA funding. She reported that 80 percent of ARRA funding had been obligated by October 1, 2009, and the remaining 20 percent included funding for programs that required new solicitations: ARI, Major Research Instrumentation Program, and the Science Masters Program. She reported the solicitations for these programs had been released and the proposals received in response to them were at various stages of the review and decision process.

Dr. Clifford Gabriel, Acting MPS Executive Officer, presented efforts to revise the NSF Strategic Plan, with a final draft anticipated to be submitted to the Office of Management and Budget (OMB) in the April/May timeframe. Input and review of draft versions will be sought from the Board prior to being submitted to OMB, and a teleconference will be arranged by the NSB Office for further discussion on the plan. Dr. Robinson provided an update on the NSB budget, including details of the NSB portion of the FY 2011 budget request.

CSB Subcommittee on Facilities (SCF)

In Closed Session, Dr. Griffiths, SCF Chairman, provided an overview of SCF activities to assess the MREFC portfolio. Dr. Marrett; Mr. Michael Sieverts, Acting Director, Budget Division (BD); and Dr. William Miller, AAAS Fellow-NSF Large Facilities Office, described materials that had been developed for the subcommittee's review including projections for future budget requests. SCF discussed the key issues to consider in the portfolio review and additional information that would be needed for the assessment. Dr. Griffiths presented a draft outline for the SCF report, which was agreed upon by the subcommittee. SCF plans to hold teleconferences to complete the draft report for the May 2010 meeting.

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

Dr. Patricia Galloway, 60ANN chairman, noted that Dr. Paul Oh, Director, Drexel University's Autonomous Systems Lab, would be the first speaker of the "Voices From the Future" lecture series, and would give a presentation to the full Board and the public (on February 4, 2010). Other distinguished speakers will make presentations at the August and December 2010 NSB meetings.

The task force heard several updates on plans associated with the NSB and NSF 60th Anniversary commemorations. Ms. Karen Sandberg, OLPA, reported on the "Sensational 60" and "NSB History Highlights, 2001-2010" documents as well as upcoming congressional activities. Additionally, Ms. Sandberg noted that OLPA established an NSF Web site where NSF and NSB staff can find the 60th Anniversary logo and PowerPoint slide templates for use in presentations during the year. Ms. Tracy Gorman, Co-Chairman of the NSF 60th Anniversary Working Group, reported on the NSF Staff Memorandum to announce the 60th Anniversary, and plans to promote the Anniversary with banners and a display case in the NSF buildings. Ms. Ann Ferrante, Co-Organizer of "The Future of NSF on Its 60th Anniversary" Symposium at the AAAS Annual Meeting on February 20, 2010, reported on the status of the Symposium. The Symposium will feature an eminent panel of NSF Directors from 1984 to present: Mr. Erich Bloch, and Drs. Rita Colwell, Neal Lane, and Walter Massey, as well as Dr. Bement. Dr. Beerling will be a Discussant and Dr. Galloway will be the Moderator.

[signed]

Craig R. Robinson
Acting Executive Officer