

MEMORANDUM TO MEMBERS AND CONSULTANTS OF THE NATIONAL SCIENCE BOARD

SUBJECT: Summary Report of the July 17-18, 2012 Meeting

The major actions and approvals of the National Science Board (Board, NSB) and a preliminary summary of the proceedings at the Board's July 2012 meeting are provided. This memorandum is also made available for public review. The minutes of the Plenary Open Session for the July 2012 meeting will be posted on the Board's public Web site (<http://www.nsf.gov/nsb/>) following Board approval.

1. Major Actions and Approvals at the 427th NSB Meeting (not in priority order):

- a. The Board authorized the Director, at his discretion, to include the construction of the Large Synoptic Survey Telescope (LSST) in a future budget. (NSB-12-31)
- b. The Board authorized the Director, at his discretion, to continue to support the management and operation of the *JOIDES Resolution* Scientific Drillship. (NSB-12-32)
- c. The Board authorized Dr. Clifford Gabriel, at his discretion, to make an award to Florida State University for the support of the National High Magnetic Field Laboratory. (NSB-12-34)
- d. The Board approved the following schedule of meetings for calendar year 2013: February 20-21, May 9-10, August 15-16, September 19-20, and November 21-22. (NSB-12-39) (Attachment)
- e. The Board approved the Committee on Strategy and Budget (CSB), Subcommittee on Facilities (SCF) report, *National Science Board Annual Portfolio Review* (NSB-12-44), subject to final edits by the SCF chairman, the CSB chairman, and the Board Chairman.
- f. The Board approved the second Companion Piece to *Science and Engineering Indicators 2012* entitled, *Diminishing Funding and Rising Expectations: Trends and Challenges for Public Research Universities* (NSB-12-45), subject to final edits by the SEI chairman and the Board Chairman.
- g. The Board Chairman, Dr. Dan Arvizu, established the *ad hoc* Committee on Honorary Awards with Dr. Alan Leshner, chairman, and Drs. Ray Bowen, Esin Gulari, and Annelia Sargent, members.

- h. The Board Chairman discharged the Committee on Programs and Plans (CPP), Task Force on Unsolicited Mid-Scale Research (MS) with thanks to Drs. Diane Souvaine and Kelvin Droegemeier, co-chairmen, and Drs. Camilla Benbow, José-Marie Griffiths, and Thomas Taylor, members.
- i. The Board approved the minutes of the Plenary Open Session (NSB-12-27) for the May 2012 meeting (www.nsf.gov/nsb/meetings/2012/0717_2/minutes.pdf). Minutes for the Plenary Executive Closed (NSB-12-25) and Plenary Closed Sessions (NSB-12-26) for the May 2012 meeting of the Board were also approved.

2. Board Chairman's Introduction and Report

Dr. Dan Arvizu, NSB Chairman, announced that the 2013 provisional calendar of Board meeting dates for meetings of the full Board during February, May, August, September, and November was approved. (See 1.d.) (Attachment)

Dr. Arvizu announced that the *ad hoc* Committee on Honorary Awards was established with Dr. Leshner as chairman (See 1.g.). The Chairman discharged the CPP Task Force on Unsolicited Mid-Scale Research. (See 1.h.) The report, *NSF Support of Unsolicited Mid-Scale Research* (NSB-12-22), is available on the NSB Web site.

Dr. Arvizu recognized the following Board Members:

- Dr. Bonnie Bassler received an honorary degree from Bates College during commencement ceremonies in May.
- Dr. France Córdova was presented with the 2012 Women in Space Science Award in June by the Women's Board of the Adler Planetarium. The award is given annually to outstanding women in science or technology who have made a lasting impact on space science.
- Dr. Patricia Galloway was elected to the Board of Directors of the Pacific Science Center July 18. The Pacific Science Center is 50 years old, and it is the first U.S. museum founded as a science and technology center and the fourth largest science museum in the country.
- Dr. Arnold Stancell was recently re-elected to a second 3-year term as Councillor to the National Academy of Engineering. He was also appointed to the Governing Board of the National Research Council for a second 1-year term.

3. NSF Director's Report

Dr. Subra Suresh, Director, National Science Foundation, introduced the following NSF staff:

- Dr. Pamela O'Neil was appointed Deputy Assistant Director, Directorate for Education and Human Resources (as of June 3, 2012).
- Dr. David Stonner was appointed Head, Office of International Science and Engineering (as of July 1, 2012).
- Dr. Wanda Ward was appointed Head, Office of Integrative Activities (as of July 1, 2012).

Dr. Suresh announced that NSF signed a Memorandum of Understanding (MOU) with the European Research Council (ERC) on July 13 that will allow NSF CAREER Grantees and NSF Postdoctoral Fellows to spend between 3 months and 1 year working in the laboratories of some of the top research labs in the European Union. Under the agreement the CAREER Awardees and Postdoctoral Fellows will be provided with support while in Europe from the ERC grant while NSF will provide the travel funds. Ms. Maire Geoghegan-Quinn, Commissioner for Research, Innovation and Science, who signed on behalf of the ERC, noted that up to 100 young American researchers are expected to be supported in the first full year of implementation.

Dr. Suresh also reported that since the last NSB meeting the House of Representatives passed the Subcommittee on Commerce, Justice, Science and Related Agencies Appropriations bill on May 10, 2012 by a final vote of 247 to 163. NSF emerged from the House with \$299 million, or 4.3 percent, above the FY 2012 appropriated levels. Two amendments passed that would place restrictions on funding Climate Change Education and Political Science Programs. Neither amendment changes NSF's bottom line. Dr. Suresh noted that it appears there will be no further movement of the Appropriations bill in the Senate before the end of the fiscal year. Although no details have emerged, the most likely scenario will be a Continuing Resolution running to mid-November 2012.

Dr. Suresh also reported that Dr. Thomas Peterson, Assistant Director, Directorate for Engineering (ENG), testified on July 16, 2012 in Chicago, IL at a field hearing before the Subcommittee on Research and Science Education of the House Science, Space, and Technology Committee on the NSF Innovation Corps (I-Corps) program. Dr. Peterson will also testify on July 19, 2012 at a full committee hearing before the House Science, Space, and Technology Committee on NSF's support of the science underlying the development of threat detection technologies.

Finally, Dr. Suresh noted that Senator John D. Rockefeller (D-WV) and Representative Eddie Bernice Johnson (D-TX) introduced identical legislation to establish scientific standards and protocols across forensic disciplines. Under the legislation, NSF would be required to establish a Forensic Science Research Program.

The following NSF staff gave presentations on new programs at NSF:

- Dr. David Stonner, Office Head, Office of International Science and Engineering (OISE), presented information on the Global Summit on Merit Review held at NSF on May 14-15, 2012 and the Global Research Council.
- Dr. DeAndra Beck, Program Manager, OISE, presented information on NSF Science Across Virtual Institutes (SAVI).
- Dr. Thomas Russell, Program Director, Office of Integrative Activities (OIA), presented information on Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE).

4. Board Committee Reports

[Note: Neither the Executive Committee (EC) nor the Committee on Education and Human Resources (CEH) met in July 2012.]

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

Ms. Allison Lerner, NSF Inspector General, briefed the committee on her office's recent accomplishments, as well as the opportunities and challenges they face. She discussed her congressional testimony in May 2012 regarding oversight of grant and contract management, her office's co-sponsorship of the International Workshop on Accountability in Science and Research Funding held in Paris during June 2012, use of data analytics software in audits, and fraud prevention.

Ms. Martha Rubenstein, NSF Chief Financial Officer, discussed material previously provided to the Committee and made special mention of acceleration of Recovery Act award spending and OMB's increased constraints on travel costs and conference support. The NSF Director pointed out that the Administration has been apprised of the importance of travel to NSF's mission requirements.

b. Committee on Science and Engineering Indicators (SEI)

The committee selected a title and cover design for the second Companion Piece to *Science and Engineering Indicators 2012*. SEI also voted to recommend that the Board approve the companion, entitled *Diminishing Funding and Rising Expectations: Trends and Challenges for Public Research Universities*, subject to final edits approved by the SEI chairman and the Board Chairman. [The full Board subsequently approved the report] (See 1.f.)

The chairman reported that the first Companion Piece to *Indicators 2012, Research & Development, Innovation, and the Science and Engineering Workforce*, was released on July 16, 2012. Drs. Griffiths, Bowen, and Mr. Reilly, participated in the release, and articles about the Companion Piece appeared in *Science* and the *Wall Street Journal*.

SEI also reviewed the process for producing *Science and Engineering Indicators 2014* and the plans for the different *Indicators* chapters. Board Members made numerous suggestions highlighting significant topics that warranted treatment if suitable data were available. Revisions in light of comments from Board Members will be circulated to the committee in advance of the December 2012 Board meeting.

c. Committee on Programs and Plans (CPP)

In CPP Open Session, the committee met on July 16, 2012 for a single agenda item and again on July 17, 2012 to complete the remainder of the committee's business.

On July 16, Dr. James Ulvestad, Division Director, Division of Astronomical Sciences (AST), Directorate for Mathematical and Physical Sciences (MPS), provided an overview of the NSF Astronomical Science Portfolio Review. This review, which is expected to be finalized and released after approval by the Mathematical and Physical Sciences Advisory Committee (MPS AC) in August 2012, considers possible tradeoffs in investments under constrained budget conditions. The presentation made clear that NSF is considering total future costs and likely future revenues when analyzing potential long-term investments, and that NSF will ensure that infrastructure costs do not compete with funds for research projects. Based on their assessments, AST anticipates difficult decisions in the coming years.

On July 17, CPP heard an information item on plans for supporting earthquake engineering research infrastructure starting in FY 2015. NSF's George E. Brown Network for National Earthquake Engineering Simulation aims to shift its resource balance so as to invest a larger proportion toward science projects and a smaller proportion for infrastructure. It will achieve this by operating a smaller number of facilities and focusing on improving its cyberinfrastructure and supporting research related to a set of grand challenge questions.

Dr. Suresh updated CPP on the status of the first cohort of INSPIRE awards. He noted that the first set of awards would be publicly announced the next day, July 18. Dr. Thomas Russell, OIA Program Director, gave a presentation about INSPIRE.

Dr. William Frazer, Provost Emeritus, University of California system, and chairman of the *ad hoc* Committee on Implementation of Board Policy on Recompensation, which is a subcommittee of NSF's Business and Operations Advisory Committee (BOAC), presented highlights from his committee's report, which was accepted by the BOAC in May 2012. CPP requested that NSF report on the progress in implementing recommendations from this report at the December 2012 Board meeting.

Dr. Karen Cone, Program Director, Directorate for Biological Sciences (BIO), provided an information item updating the committee on iPlant's recent site visit, current activities and future plans. iPlant enables transformative plant science research through the use of a unified cyberinfrastructure. Approval for iPlant continuation will be an action item in December 2012.

Dr. Elizabeth Blood, BIO Program Director, provided an information item on the National Ecological Observatory Network (NEON), updating CPP on the state of construction of the distributed facility and the nature of the science that will be conducted. NEON will be requesting CPP action in December 2012 regarding funds for its first 3 years of operations.

Ms. Irene Qualters, Program Director, Office of Cyberinfrastructure (OCI), gave an information item update on the progress in construction and preliminary operations of the Blue Waters supercomputer project. Potential renewal of Blue Waters will also be an action item in December 2012.

CPP then turned to a Program Portfolio Planning presentation on Space Weather. Dr. Richard Behnke, Program Officer, Directorate for Geosciences (GEO), provided an overview presentation of NSF's role in Space Weather research nationally and internationally. He stated that space weather as an integrated, interdisciplinary field was formed 30 years ago. Several scientists sought NSF funding to develop a science that was integrated, systemically, across solar physics, astronomy, magnetospheric science and other fields. They anticipated that a cross-disciplinary, systemic approach could yield more power to understand the dynamics of solar and magnetic phenomena in space and space-earth interactions. Breakthroughs in this field have enormous importance for societies that are dependent on advanced technologies like GPS, complex electric grids, and advanced communications technologies. Following the presentation and discussion, Dr. Michael Morgan, Division Director, Division of Atmospheric and Geosciences, worked with Drs. Droegemeier and Sargent to write a consensus summary of the portfolio presentation and ensuing Board discussion for presentation at NSB Plenary Open Session on July 18, 2012.

Finally, Dr. Alan Leshner reported on a summary document on the Program Portfolio Planning process on Neuroscience, which was held during the May 2012 Board meeting. He highlighted two points: that NSF is encouraged to find ways to make its Neuroscience portfolio better known and that the NSF should consider developing a clearer NSF focal point on Neuroscience.

In CPP Closed Session, the committee received two written information items and approved three action items:

1. NSB Action Item - Construction of the Large Synoptic Survey Telescope (LSST) in a Future Budget.
2. NSB Action Item - Extension of Operations and Management of *JOIDES Resolution* Scientific Drillship.
3. NSB Action Item – Extension of Support for the National High Magnetic Field Laboratory at Florida State University.

[The full Board subsequently approved the above resolutions] (See 1.a. – 1.c.)

d. Committee on Strategy and Budget (CSB)

In CSB Open Sessions, Drs. Suresh and Cora Marrett, NSF Deputy Director, provided the committee with an update on the FY 2013 appropriations process. Dr. Marrett reported that both House and Senate marks provide positive growth for NSF with a 4 percent increase over FY 2012 in the House and 3 percent over FY 2013 in the Senate marks. The House bill did see two significant amendments included in the final version. The amendments would prohibit NSF from funding of the Climate Change Education Program and from funding political science research. Dr. Suresh reported that both House and Senate reports expressed strong support for core research. He also reported on the uncertainty of final appropriations action and does not expect final action before January 2013. Dr. Suresh ended the discussion with a brief update on the potential budget implications of sequestration, which could include mandatory across-the-board spending cuts associated with the 2011 Budget Control Act. Cuts could be up to 8 percent but at this time it is not clear whether they would be applied equally to all agencies.

The committee also approved the Annual Portfolio Review (APR), which was previously approved by the Subcommittee on Facilities (SCF). The APR is used to inform NSB decision-making and guidance on project prioritization and strategic budget planning. The current version builds on the previous reviews to develop a reliable and repeatable process that will help ensure that the NSF's facilities in operation, under construction and being planned are aligned with NSF investment priorities. *[The full Board subsequently approved the report] (See 1.e.)*

In CSB Closed Session, the committee heard an update on the NSF's progress in developing the agency's FY 2014 Budget Request to the Office of Management and Budget (OMB).

CSB Subcommittee on Facilities (SCF)

Dr. Carl Lineberger summarized changes based on subcommittee comments and feedback made to the APR document since the May 2, 2012 meeting. The APR was organized around four questions: (1) the distribution of facilities across NSF, (2) the projected cost of operation and maintenance of facilities, (3) how well the projects are adhering to best practices in facility

management, and (4) the attributes of the facilities and the extent to which they align with NSF strategic priorities. Dr. Lineberger discussed the suggested timeline for developing the annual Portfolio Review. After questions and comments from Board Members, the subcommittee approved the report.

[signed]
Michael L. Van Woert
Executive Officer

NATIONAL SCIENCE BOARD
CALENDAR OF MEETINGS
2013

February 20 - 21
(Wednesday - Thursday)

May 9 - 10
(Thursday - Friday)
[Annual Meeting and Awards Dinner]

August 15 - 16
(Thursday - Friday)

September 19 - 20
(Thursday - Friday)
[Annual Retreat and Visit]

November 21 - 22
(Thursday - Friday)