

**APPROVED MINUTES¹
OPEN SESSION
416TH MEETING
NATIONAL SCIENCE BOARD**

Black Hills State University
Spearfish, South Dakota
September 24, 2010

Members Present:

Ray M. Bowen, Chairman
Esin Gulari, Vice Chairman
Mark R. Abbott
Barry C. Barish*
Camilla P. Benbow
Kelvin K. Droegemeier*
Patricia D. Galloway
José-Marie Griffiths
Elizabeth Hoffman*
Louis J. Lanzerotti*
Alan I. Leshner*
Douglas D. Randall
Arthur K. Reilly
Diane L. Souvaine
Jon C. Strauss*

Cora Marrett, *ex officio*

Members Absent:

John T. Bruer
France A. Córdoba
G.P. “Bud” Peterson
Thomas N. Taylor
Richard F. Thompson

¹ The minutes of the 416th meeting were approved by the Board at the December 2010 meeting.

* Consultant

The National Science Board (Board, NSB) convened in Open Session at 8:10 a.m. on Friday, September 24, 2010 with Dr. Ray Bowen, Chairman, presiding (Agenda NSB-10-61, Board Book page 277). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 3: Chairman's Introduction and Welcome from Dr. Kay Schallenkamp, President of Black Hills State University

Dr. Bowen introduced Dr. Kay Schallenkamp, President of Black Hills State University (BHSU) since 2006. (Brief Biography, Board Book page 289). Dr. Schallenkamp welcomed the Board to BHSU, a campus of 4,500 students representing each county in South Dakota, 48 states, and 22 countries. Dr. Schallenkamp briefly discussed BHSU's educational programs and the university's science research collaborative projects, and thanked the Board and NSF for its commitment to science and science education.

AGENDA ITEM 4: Chairman's Report

Dr. Ray Bowen, NSB Chairman, reported on several items.

a. Candidate Sites for 2011 Retreat and Off-Site Meeting

Dr. Bowen announced that the Board will be considering locations for next year's off-site meeting and retreat to take place September 13-14, 2011. Dr. Bowen asked that Board Members give their suggestions to Dr. Michael Van Woert, Executive Officer and Board Office Director. The Board will discuss and select the location of the 2011 off-site meeting and retreat at the December 2010 meeting.

b. Release of Report on STEM Innovators

The Board's latest report entitled, *Preparing the Next Generation of STEM Innovators: Identifying and Developing Our Nation's Human Capital* (NSB-10-33) was officially released on September 15, 2010 at the National Press Club in Washington, D.C. Dr. Cora Marrett, Acting NSF Director, and Dr. Joan Ferrini-Mundy, Acting EHR Assistant Director at NSF, joined Drs. Camilla Benbow and Bowen in the public release briefing. The rollout was a resounding success with a standing-room only audience with over 100 persons in attendance.

The report focuses on the development of the Nation's human capital through the education system. Currently, the abilities of many American young men and women go unrecognized and underdeveloped, so that they fail to reach their full potential. The Board believes that the recommendations set forth in this report will help ensure a legacy of continued prosperity and a renewed aspiration towards equity and excellence in U.S. STEM education. Copies of the STEM Innovators publication were distributed at the meeting, and the report is available on the NSB Web site: www.nsf.gov/nsb.

c. Accelerating Innovation Research (AIR) Program

The NSF Directorate for Engineering (ENG) is undertaking two new activities to accelerate the process of innovation in its AIR program. The first will encourage the translation of the numerous, technologically-promising, fundamental discoveries made by NSF researchers, while drawing upon and building the entrepreneurial spirit of the researchers and students. The second activity will foster connections between an existing NSF innovation research alliance whose complementary focus will spur the development of discoveries into innovative technologies through collaboration.

d. Election of Executive Committee Member

In the Plenary Executive Closed Session, Dr. Patricia Galloway was elected to the Executive Committee to fill the remaining 8 months of a 2009-2011-term vacancy, which will expire in May 2011.

e. Committee Announcement

Dr. Bowen discharged the *ad hoc* Committee on Nominating for NSB Elections, informally known as the Elections Committee, with thanks to Dr. Esin Gulari, chairman, and Drs. Bud Peterson and Douglas Randall, members.

f. Board Member Recognition

Dr. José-Marie Griffiths, Vice President for Academic Affairs at Bryant University, was appointed to a 3-year term on the Advisory Board of the National Technical Information Service (NTIS). NTIS helps the Department of Commerce promote the Nation's economic growth by providing access to information that stimulates innovation and discovery.

AGENDA ITEM 5: Director's Report

Dr. Marrett, NSF Acting Deputy Director, reported on the following items.

a. Response to Evaluation Report of NSF's Human Capital Management

Dr. Cora Marrett, Acting NSF Director, reported that NSF received the Evaluation Report from the Office of Personnel Management (OPM) on NSF's Human Capital Management. The review identified several concerns about the NSF human capital policies as well as programs and practices, and determined that certain activities had not been implemented. NSF is to respond to OPM by October 4, 2010 regarding plans to address the required actions and the recommendations provided. NSF is on track for responding or meeting that deadline. Input from the Board with Mr. Arthur Reilly coordinating the responses from Board Members will be incorporated into the response. NSF reestablished a positive engagement with OPM, and NSF is especially pleased that OPM repeatedly expressed the desire to partner with NSF to meet the human capital management goals and objectives.

b. Congressional Update

Recent Hearings

On September 23, 2010 the House Committee on Science and Technology, Subcommittee on Research and Science Education held a hearing to examine the current state of science and technology policy research. The hearing looked at how this research informs policymaking, and the role of the Federal Government in fostering academic research and education in this emerging interdisciplinary field. Dr. Julia Lane, Program Director, Science of Science and Innovation Policy, provided testimony for NSF regarding STAR METRICS and the Science of Science Policy program.

On September 29, 2010 the House Oversight and Government Reform, Subcommittee on Domestic Policy will hold a hearing entitled “From Molecules to Minds: The Future of Neuroscience Research and Development.” Dr. Myron Gutmann, Assistant Director, Directorate for Social, Behavioral, and Economic Sciences (SBE), will submit testimony on behalf of NSF’s efforts in this area.

Appropriations

September 30, 2010 will mark the end of the fiscal year. There was limited action on Appropriations bills in Congress. A Continuing Resolution (CR) to keep agencies operating is expected, and NSF anticipated a CR for funding at the current operating levels until mid-November 2010.

As a reminder, the Senate Committee on Appropriations provided NSF with a 7 percent increase over last year in its version of the Subcommittee on Commerce, Justice, Science and Related Agencies Appropriations bill, which includes NSF’s funding for FY 2011. The House Committee on Appropriations, Subcommittee on Commerce, Justice, Science, and Related Agencies provided NSF an 8 percent increase in that bill. It was anticipated that Congress will come back after the elections in mid-November 2010 to renew efforts to pass the Appropriations bills.

AGENDA ITEM 6: Presentations from Tribal College Presidents

Dr. Bowen introduced Dr. Jody Chase, NSF Program Director, Tribal Colleges and Universities Program (TCUP) (Brief Biography, Board Book page 290) to serve as moderator. Dr. Chase noted the role NSF has played in support of these colleges since the mid-1970s and the role that tribal colleges play with broadening participation in STEM as well as sustaining economic development on reservations and in surrounding communities. Dr. Chase added that NSF’s partnerships with tribal colleges also created support for the tribal communities.

Collectively, the panel presented information on the following topics: the history of tribal college institutions, development of educational programs and facilities, importance of continued funding, collaborations between colleges in the state, management of resources and grants, student infrastructure, and community outreach. The panel consisted of the following:

- Mr. Thomas Shortbull, President, Oglala Lakota College (Brief Biography, Board Book page 293)
- Dr. Laurel Vermillion, President, Sitting Bull College (Brief Biography, Board Book page 294)
- Dr. Georgia Hackett, Vice President for Institutional Relations and Resource Development, Sinte Gleska University, [representing Dr. Lionel R. Bordeaux, President (Brief Biography, Board Book page 291)]
- [Although slated on the Plenary Agenda, Dr. Diana Canku, President, Sisseton Wahpeton College, (Brief Biography, Board Book page 292) could not attend.]

AGENDA ITEM 7: Overview of South Dakota Science and Engineering Research

Dr. Bowen introduced Dr. Jack Warner, Executive Director and Chief Executive Officer, South Dakota Board of Regents (SDBR) (Brief Biography, Board Book page 299). Dr. Warner noted that the Board of Regents is the constitutional governing board for the six public universities, the school for the deaf, and the school for the blind and visually impaired in South Dakota. Dr. Warner described collaborative efforts for a system of 33,000 students and the consistent growth of enrollment over the past 13 years, growth of research centers, investments in infrastructure, and the path to increase degree production and academic quality and performance.

Dr. Warner introduced the presenter, Dr. Gary Johnson, System Vice President of Research, SDBR, and head of the Research Advisory Council, a collaborative of all research vice presidents (Brief Biography, Board Book page 295). Dr. Johnson described South Dakota's research rankings and science and engineering indicators, record levels of university research underway, Experimental Program to Stimulate Competitive Research (EPSCoR) programs, and various research center collaborations and partnerships.

AGENDA ITEM 8: Discussion on Research at South Dakota's Institutions of Higher Learning

Discussion Leader, Dr. Gary Johnson, System Vice President of Research, SDBR, introduced the panel of discussants who are research officers or their designees from the Ph.D. granting institutions in South Dakota.

The discussants each gave a brief presentation summarizing the science and engineering research and education endeavors at their respective academic institutions to include: collaborative and interdisciplinary research, significant Federal Government funding, various research centers, and academic programs and areas of strength and potential.

Discussants:

- Dr. Duane Hrcir, Provost and Vice President for Academic Affairs, South Dakota School of Mines and Technology (SDSMT) (Brief Biography, Board Book page 296)
- Dr. Laura Jensi, Vice President for Research, University of South Dakota (USD) (Brief Biography, Board Book page 297)

- Dr. Kevin Kephart, Vice President for Research, South Dakota State University (SDSU) (Brief Biography, Board Book page 298)
- Dr. Jack Warner, Executive Director and Chief Executive Officer, SDBR (Brief Biography, Board Book page 299)

Responding to a question from Dr. Douglas Randall on the ability of a small state to maintain at least three research institutions and probably a fourth, the panelists explained that collaborations with every institution and with other organizations were helpful in sustaining growth.

AGENDA ITEM 9: Broad Impact of Deep Underground Science and Engineering Laboratory (DUSEL) on South Dakota Graduate Education in Physics

Dr. Bowen introduced Dr. Robert Wharton, President, South Dakota School of Mines and Technology (SDSMT) (Brief Biography, Board Book page 300). Dr. Wharton stated that SDSMT was created to support the Homestake Mine in Lead, South Dakota. It was North America's largest and deepest mine and second largest gold producer in the U.S. He described the vision to develop a nationally competitive program with a strong core of faculty in the field of high energy physics over the next 10 years and produce a cadre of well trained M.S. and Ph.D. physicists. Dr. Wharton commented that South Dakota's commitment to physics education was to increase physics faculty statewide and the presence of DUSEL allowed the state to attract high-quality candidates to applicant pools and a larger number of students interested in physics. Collaborations and investments in education and scholarship reflect DUSEL's potential to inspire education in physics. DUSEL serves as a catalyst for the growth of STEM education in South Dakota and the surrounding region.

AGENDA ITEM 10: Integrative Graduate Education and Research Traineeship (IGERT) Program in South Dakota

Dr. Bowen introduced the last presenter, Dr. Mary Berry, Professor and Chairman of the Department of Chemistry, USD (Brief Biography, Board Book page 301). Dr. Berry described the IGERT program project goals: (1) ensure South Dakota's capacity for meaningful contribution to research and workforce development in next generation solar cells and related technologies; (2) establish an inter-institutional, interdisciplinary program for graduate education and training at the interface of modern materials chemistry, materials engineering, and electrical engineering; and (3) train professionals with broad interdisciplinary backgrounds with uncompromised depths of knowledge in their chosen fields. Dr. Berry then presented various examples of partnerships, research efforts, and student resources.

In response to Dr. Marrett, Dr. Berry noted that although the partnerships present managerial challenges, faculty have been collaborating since 2005, and having students exchange campuses is just one more step in the collaborative effort.

AGENDA ITEM 11: Chairman's Closing Remarks

Dr. Bowen thanked all the speakers for their participation and enthusiasm on a wide variety of subjects relating to education and research in South Dakota. He stated that the Board was honored to have the opportunity to engage in this forum with the tribal college presidents; and learn about the ongoing research at South Dakota's academic institutions, the state's graduate education in physics in relation to DUSEL, and the IGERT program. Lastly, Dr. Bowen expressed his appreciation to Dr. Schallenkamp and the university staff, especially Ms. Kathy Johnson, as well as the Board Office staff, particularly, Ms. Bev Sherman, Mr. Blane Dahl, and Ms. Pamela McKinley and her team.

Dr. Bowen adjourned the Open Session at 11:50 a.m.

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

[Note: There were no Board committee meetings held during the September 2010 off-site meeting.]