

**APPROVED MINUTES¹
OPEN SESSION
413TH MEETING
NATIONAL SCIENCE BOARD**

National Science Foundation
Arlington, Virginia
February 3-4, 2010

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
France A. Córdoba
Kelvin K. Droegemeier
José-Marie Griffiths
Esin Gulari
Louis J. Lanzerotti
Alan I. Leshner
Douglas D. Randall
Arthur K. Reilly
Diane L. Souvaine
Thomas N. Taylor

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

Members Absent:

John T. Bruer
G. Wayne Clough
Elizabeth Hoffman*
G.P. “Bud” Peterson
Jon C. Strauss
Kathryn D. Sullivan
Richard F. Thompson

¹The minutes of the 413th meeting were approved by the Board at the May 2010 meeting.

* Consultant

The National Science Board (Board, NSB) convened in Open Session at 11:30 a.m. on Thursday, February 4, 2010 with Dr. Steven Beering, Chairman, presiding (Agenda NSB-10-7, Board Book page 237). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 8: 60th Anniversary Distinguished Speaker, Dr. Paul Oh

At the request of Dr. Beering, Dr. Patricia Galloway, Vice Chairman and Chairman of the Task Force on the NSB 60th Anniversary, introduced the first of three Distinguished Speakers in the “Voices from the Future” lecture series to commemorate the Board’s 60th Anniversary in 2010. She noted that the series was made possible through the efforts of the Board’s Task Force on the NSB 60th Anniversary with the help of NSF’s 60th Anniversary Working Group. Criteria for speaker nominations from NSF directorates were based on individuals who were early in their careers with potential for making an impact on science education, made stunning discoveries that have influenced the direction of science, were notable as the “best minds in science,” contributed to research that benefits society, and displayed a passion about their research.

Dr. Paul Oh, Director, Autonomous Systems Lab at Drexel University and the Associate Department Head of Drexel’s Mechanical Engineering Department, is the first speaker in the series. Dr. Oh presently holds an IPA appointment as Program Director for Robotics within the Directorate for Computer and Information Science and Engineering (CISE). His focus is on fundamental research, design and development of robotics and unmanned systems.

In his presentation, “Robotics: Catalyzing a Third Wave,” Dr. Oh talked about the Drexel Autonomous Systems Lab (DASL), which began in 2000. Combining passions in robotics and flight, the lab’s efforts were driven by intellectual curiosities; however, three events steered these passions to meet urgent and important national needs: (1) September 11, 2001 raised Homeland Security needs, and DASL responded with bird-sized unmanned aerial vehicles that can assist first responders and war-fighters with information gathering; (2) Hurricane Katrina in 2005 revealed disaster response needs, and DASL responded with unmanned systems to help treat and extract casualties and autonomously deliver cargo like medical supplies; and (3) a Boeing Welliver Fellowship imparted industry’s needs for engineering graduates with skills to work on multi-national design teams, and DASL assembled an international team to design advanced humanoids. The net effect is a decade-long effort that led to projects with broad societal impacts.

Dr. Oh described various lab projects and how they have been transformative, namely the creation of new design tools, products, and jobs. Moreover, his presentation provided a retrospect on the elements that catalyzed these transformations, such as citizen science and today’s global design teams. Dr. Oh views the “first wave” of robotics being those designs that transformed the factory floor, and stated that today’s robots reflect a “second wave” where tele-operation is transforming missions as epitomized by robotic rovers on Mars. The “third wave,” akin to the largest and longest lasting wave on a beach, is where robots will transform society and the quality of life.

Dr. Galloway thanked Dr. Oh for his presentation and announced upcoming “Voices from the Future” Distinguished Speakers at the following 2010 Board meetings: Dr. Luis von Ahn, Assistant Professor in the Computer Science Department, Carnegie Mellon University, at the August Board meeting; and Dr. Emily Brodsky, Associate Professor of Earth and Planetary Sciences, University of California at Santa Cruz, at the December Board meeting.

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

The National Science Board (Board, NSB) reconvened in Open Session at 1:05 p.m. (Agenda NSB-10-13, Board Book page 13; NSB-10-7, Board Book 237). In accordance with the Government in the Sunshine Act, this portion of the meeting was open to the public.

AGENDA ITEM 9: Approval of Open Session Minutes, December 2009

The Board unanimously APPROVED the Open Session minutes of the December 2009 Board meeting (NSB-09-102, Board Book page 261).

AGENDA ITEM 10: Closed Session Items for May 2010 Meeting

The Board unanimously APPROVED the Closed Session items for the May 4-5, 2010 meeting (NSB-10-9, Board Book page 277).

AGENDA ITEM 11: Chairman’s Introduction and Report

In the Chairman’s Introduction on Wednesday, February 3, 2010, and the Chairman’s Report in the Plenary Open Session on Thursday, February 4, 2010, Dr. Beering announced and reported on several items.

a. Departure of NSF Director

[This was a pre-public announcement in the Plenary Executive Closed Session on the morning of February 4, 2010. The public announcement would be released in the afternoon on that same day.] Dr. Beering announced that Dr. Arden Bement, NSF Director, was invited to lead Purdue University's new Global Policy Research Institute in West Lafayette, Indiana, and will begin his new position in June 2010. Dr. Beering quoted fellow Board Member, Dr. France Córdoba, President of Purdue University, stating that Dr. Bement “has a tremendous amount of experience in understanding, formulating, and shaping policy on critical issues. Policy, whether it's related to economics, agriculture, poverty, climate change or energy sources, is built on research and science aimed at improving people's lives. A dedicated institute is another opportunity for Purdue University to strengthen connections between science and society.” Dr. Beering, Past

President of Purdue University, stated that he was particularly thrilled to welcome Dr. Bement back to the university. Dr. Beering noted that Dr. Bement, a former nuclear engineering professor and department head at Purdue University, had retained tenure at Purdue during the time that he served in Washington, D.C.

Dr. Bement stated that it was both an easy and tough decision because being at NSF had been the greatest experience of his life. His 6-year term as NSF Director would have ended in November 2010. His departure in June 2010 would take place after the appropriation and authorization hearings on Capitol Hill. Dr. Bement expressed appreciation that the university continued to hold his academic tenure during his latest 9 years of public service. He stated that he will leave with a great feeling of gratitude for having served with the Board and the Foundation. In June 2010, Dr. Bement would be the second longest-serving Board Member with a total time on the Board, including as Acting Director and Director, of more than 12 years.

b. Release of *Science and Engineering Indicators 2010*

The Chairman reported on the release of *Science and Engineering Indicators 2010 (Indicators)* (NSB-10-1) and the *Key Science and Engineering Indicators 2010 Digest (Digest)* (NSB-10-2) at the White House Conference Center on January 15, 2010, and drew Board Member's attention to the photographs and media coverage of the new publications' rollout (Board Book pages 13-42). It was the first time the Board released *Indicators* at the White House, and Dr. Beering thanked Dr. John Holdren, the President's Science Advisor and Director of the Office of Science and Technology Policy (OSTP), who hosted the event.

Produced biennially, *Indicators* is widely considered the "gold standard" for information detailing the state of the American science and technology enterprise. Mr. Kei Koizumi, Assistant Director, Federal Research and Development, represented OSTP at the rollout event with a stirring talk on the value of the report. He later posted some of his remarks on the White House and OSTP blogs. Drs. Arden Bement, Louis Lanzerotti, and José-Marie Griffiths joined Dr. Beering for this important event, which received wide press coverage in major news venues such as the *Wall Street Journal*. Reporters from the *Wall Street Journal*, *Science*, and *Nature* attended the first press-only background briefing by Web cast held 2 days before the White House event.

c. Release of *Indicators* Companion Piece and 60th Anniversary Symposium at AAAS

Dr. Beering announced that the Companion Piece to *Indicators* entitled, *Globalization of Science and Engineering Research* (NSB-10-3), would be released at the American Association for the Advancement of Science (AAAS) Annual Meeting in San Diego on Friday, February 19, 2010. Also at the AAAS Annual Meeting, would be a Symposium called, "The Future of NSF on Its 60th Anniversary," on Saturday, February 20, 2010, in commemoration of the 60th Anniversaries of NSB and NSF. [See committee reports for further details.]

d. NSB Office Staff Introduction

Dr. Beering welcomed Mr. Blane Dahl, a new Science Policy Analyst with the Board Office, who will support the Board's policy writing activities. Mr. Dahl previously served for 5 years at NSF as the Education and Human Resources Staff Associate for Budget and Program Analysis. Prior to joining NSF, he worked in the Office of the Secretary at the U.S. Department of Agriculture. For the past 2 years, Mr. Dahl lived in England and worked for an environmental consulting firm there.

e. Event Announcements

Dr. Beering announced that he and Drs. José-Marie Griffiths and Diane Souvaine attended events to honor outstanding STEM educators and mentors on January 5-6, 2010. 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 (PSEMEM) were honored. Both programs are administered by NSF for the White House. Drs. Beering and Souvaine also attended a discussion of the honorees with the Secretary of Education, Mr. Arne Duncan, and OSTP Director, Dr. John Holdren. Additionally, they attended the President's announcement to add public-private investments of more than \$250 million to the President's "Educate to Innovate" STEM education efforts.

On February 1, 2010 Dr. Beering attended the rollout of the NSF FY 2011 Budget Request to Congress with Dr. Bement. Also, on February 5, 2010 Dr. Beering was scheduled to be one of the speakers at the Science and Technology Centers Awards Ceremony at NSF.

Dr. Beering announced that February 8, 2010 was 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 for potential candidates and requested that nominations from Board Members be forwarded to Dr. Craig Robinson, Acting NSB Executive Officer.

Lastly, Dr. Beering stated that he would testify before the House Committee on Appropriations, Subcommittee on Commerce, Justice, and Science on February 10, 2010. [This testimony would be cancelled due to inclement weather.] Additionally, he would return to 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.

f. Committee Announcements

Dr. Beering had several announcements relating to NSB committees:

During Plenary Executive Closed Session, Board Members were elected to the ad hoc Committee on Nominating for NSB Elections (NOMCOM), informally called the Elections

Committee. Members of the committee are Dr. Alan Leshner, chairman, and Drs. Kelvin Droegemeier, Esin Gulari, and Douglas Randall, members.

The Committee on Strategy and Budget (CSB) Task Force on Cost Sharing (CS) was discharged with thanks to Dr. Kelvin Droegemeier, chairman, and Drs. Mark Abbott, Camilla Benbow, Jon Strauss, Thomas Taylor, and Richard Thompson, members.

The Committee on Programs and Plans (CPP) Task Force on Sustainable Energy (SE) was also discharged with thanks to Drs. Dan Arvizu and Jon Strauss as co-chairmen, and Drs. Mark Abbott, Camilla Benbow, John Bruer, José-Marie Griffiths, Elizabeth Hoffman, Douglas Randall, and Mr. Arthur Reilly, members.

Dr. Beering announced that three task forces were established to work on the NSB priorities and called on the respective chairmen to report:

For the Committee on Strategy and Budget (CSB) Task Force on Data Policies (DP), Dr. Griffiths, chairman, reported that the policy issues surrounding data were critically important at the national and international levels as well as for NSF with its mission to promote the progress of science. Given that sharing and managing research data are problematic for the entire international research community, the Board has an opportunity to contribute productively to a significant and ongoing policy discussion. She noted that several of the presentations at the Board meeting either directly or indirectly involved discussions about data. These presentations illustrated the value of the Board examining and contributing to this timely topic. Dr. Griffiths explained that the many issues surrounding data sharing and data management are complex, and include broad and timely access to data; sustainability of data, particularly of digital data; the cost burdens associated with data management; and openness of data generated with taxpayer dollars.

Dr. Griffiths stated that several Board Members offered to join this task force including Drs. Mark Abbott, Camilla Benbow, G.P. “Bud” Peterson, Diane Souvaine, Thomas Taylor, and Mr. Arthur Reilly. She also asked several NSF senior staff to participate on this task force: Dr. Myron Gutmann, Assistant Director, Directorate for Social, Behavioral, and Economic Sciences (SBE); Dr. Edward Seidel, Acting Assistant Director, Directorate for Mathematical and Physical Sciences (MPS); and Dr. Jeannette Wing, Assistant Director, Directorate for Computer and Information Science and Engineering (CISE). She noted that she would be glad to have other interested Board Members join the task force.

Finally, Dr. Griffiths stated that she will be working with task force members and Mr. Reilly, CSB chairman, before the May 2010 meeting to develop a charge and detailed workplan for CSB and the Board to consider for approval. She proposed that the task force first develop a statement of principles to guide subsequent Board efforts to develop specific policy recommendations, focused initially on NSF, but that could potentially promulgate through other Federal agencies in a national and international context. She stated that NSF is developing a draft data policy statement, which would represent a first step, and that the task force would review and respond to that statement and any other drafts in a timely manner, and work with NSF to monitor the results of any implementation of those policies.

For the Committee on Programs and Plans (CPP) Task Force on Mid-Scale and Multi-Investigator Research (MS), Dr. Droegemeier, chairman, reported that mid-scale research activities enable groups of investigators, often across many disciplines and at multiple institutions, to attack potentially transformative research ideas. Those types of projects aren't covered by single investigator grants or large facilities. The task force will consider a variety of issues to ensure that investigators have the flexibility to creatively carry out these important activities and that NSF has appropriate programs in place. He noted that the task force will work on an abbreviated time schedule, perhaps 1 year or less.

Dr. Droegemeier reported that several Board Members agreed to serve on this task force. He continued that one of the important aspects of this task force is to have strong engagement by NSF at the Assistant Director and program staff level. He stated that he distributed a discussion document to Board Members that proposed some objectives for the task force, and Dr. Bement offered excellent comments to help guide the task force, especially with the point of view of receiving information NSF has about its portfolio of mid-scale research activities.

Dr. Droegemeier invited interested Board Members to participate on the task force, which will work to finalize its members and have a formal charge and workplan developed by the May 2010 Board meeting.

AGENDA ITEM 12: Task Force on Merit Review (MR)

For the newly established Task Force on Merit Review, Dr. Beering called on Dr. Leshner, chairman, to report. Dr. Leshner stated that the task force plans to accomplish its mission in about 14 months and that an initial draft charge was compiled. The task force will try to answer some specific questions without a direct outcome predetermined. As it has been more than 10 years since the criteria were put into place, the task force will address specific questions such as: How are the criteria working? How are the criteria being applied by program officers throughout NSF? What kind of guidance is given to principal investigators? How are they writing proposals? How are the reviewers using these review criteria, and how effective are they? How are the criteria being implemented at the institutional level?

Dr. Leshner explained that the task force will establish a workplan. It will also conduct surveys for what happens within the organization, how the investigators view these criteria, and how the institutions are approaching these criteria. During March 2010, the task force plans to hold a teleconference, and have a final workplan for the May 2010 Board meeting.

Dr. Bement commented that merit review is an important study for NSF, and it engages the community by stressing parity between intellectual merit and broader impacts in terms of evaluating proposals. He stated that two areas deserve special attention where parity is broken: accountability and the area of recognition in terms of achievement.

Dr. Leshner announced that the following Board Members agreed to serve on this task force: Drs. Ray Bowen, John Bruer, Esin Gulari, Louis Lanzerotti, Douglas Randall, Diane Souvaine, and Thomas Taylor. Additionally, NSF staff liaisons will be Dr. Lance Haworth, Director,

Office of Integrative Activities (OIA), and Dr. Timothy Killeen, Assistant Director, Directorate for Geosciences (GEO).

AGENDA ITEM 13: Director's Report

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

a. NSF Staff Introductions

Dr. Bette A. Loiselle began serving her Limited Term Senior Executive Service appointment as the Director, Division of Environmental Biology (DEB), on January 31, 2010. Dr. Loiselle came to NSF from the University of Missouri where she was a full professor in the Department of Biology. Dr. Loiselle received her Ph.D. in Zoology from the University of Wisconsin in 1987.

b. Science and Technology Centers, Class of 2010

Dr. Bement reported that NSF will soon announce five new Science and Technology Center (STC) awards as a result of the recent competition. The STC program supports integrative partnerships that require large-scale, long-term awards to produce research and education of the highest quality. In October 2008, NSF received 247 preliminary proposals. Following extensive panel review, 45 full proposals were invited and reviewed by both panel and *ad hoc* experts, 11 were site visited, and 5 were recommended for awards by a Blue Ribbon panel. More than 100 program directors from throughout NSF assisted in the review process. Dr. Bement conveyed his thanks to those program directors and external reviewers. The 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. NSF will continue to update the Board as the new centers fulfill their promise.

c. NSF Research Support in Haiti

Researchers and officers across a range of programs and agencies began coordinating efforts within hours of the earthquake in Haiti on January 20, 2010. The efforts 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.

The existing framework, along with rapid grant support from NSF, enabled teams of researchers from a range of disciplines - such as earth science, engineering, social science and others - to immediately prepare to embark for the region as soon as the earthquake struck, ensuring that the teams could gather data before it was lost. Findings from these studies and similar rapid response efforts may help Haiti rebuild and respond to future disasters with greater resilience.

Notable efforts were made by research teams from Purdue University, the University of Texas at Austin, the University of California at San Diego, and the University of Colorado at Boulder, among others.

d. Congressional Update

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 (science, technology, engineering, and mathematics) fields. The hearing examined ways to improve the quality and effectiveness of STEM education at colleges and universities to better prepare students with the skills needed for the workforce of the 21st century.

Additionally, a number of upcoming hearings related to the FY 2011 budget were scheduled: Dr. Bement was also scheduled to testify on February 10, 2010 at the House Committee on Appropriations, Subcommittee on Commerce, Justice, and Science, and will review NSF's budget request [this testimony was cancelled due to inclement weather]; on March 3, 2010 the Senate Commerce Subcommittee on Science and Space will hold a hearing on the science and technology budget, and Dr. Bement, along with OSTP and the National Institute of Standards and Technology (NIST), will testify; and on March 10, 2010 Drs. Bement and Beering will testify before the House Subcommittee on Research and Science Education on NSF's Budget Request.

AGENDA ITEM 14: Open Committee Reports

a. Executive Committee (EC)

Dr. Arden Bement, EC chairman, reported that he provided a brief overview of the 2011 Budget Request to the committee. The committee discussed plans to review and approve the revised draft of NSF's Strategic Plan prior to submission to Office of Management and Budget (OMB). EC will work closely with CSB to ensure that the Board's comments are addressed. Dr. Bement also announced a new multilateral research initiative with six other G8 Research Councils, which responds to a recommendation in the Board's February 2008 report, *International Science and Engineering Partnerships: A Priority for U.S. Foreign Policy and Our Nation's Innovation Enterprise (NSB-08-4)*. The finding states to review and fund proposed international science and engineering projects. The first call is an Interdisciplinary Program on Application Software Towards Exascale Computing for Global Scale Issues.

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

Dr. Dan Arvizu, A&O chairman, reported that the committee recognized a previous suggestion by Dr. Patricia Galloway to share grant risk profile information with the Board on an annual basis, which was discussed at the December 2009 meeting. Ms. Marty Rubenstein, Acting Chief

Financial Officer (CFO), provided an update on NSF's action to address the concerns of the 2009 financial statement audit where there was a significant deficiency noted in contract monitoring of cost reimbursement-type contracts. Although the corrective action plan is still being finalized, steps were taken to meet the challenge. Ms. Rubenstein also reported on the status of the Antarctic support contract recompetition.

Mr. John Lynskey, Deputy Division Director, Division of Financial Management (DFM), apprised A&O of the success NSF had in obtaining quarterly reports from thousands of NSF America Reinvestment and Recovery Act (ARRA) grantees.

Ms. Shirl Ruffin, Deputy CFO, reported on plans underway to make a new financial and property system. This system must meet NSF's needs, interface with grantees effectively, and meet current and future government-wide standards. The new system is critical to mitigating issues of future noncompliance.

Ms. Allison Lerner, NSF Inspector General, discussed the Office of Inspector General's (OIG's) recent ARRA efforts. OIG is focused on projects that can be accomplished quickly and provide fresh, actionable information to NSF management. It is initiating a series of reviews at 10 institutions to assess their ability to handle Federal funds and to comply with all requirements. In addition to these financial capability reviews, OIG will participate in a broader Government-wide evaluation of the quality and accuracy of the data being prepared by ARRA recipients.

Ms. Lerner also briefed A&O on two closed OIG investigations. The first investigation involved financial improprieties with a result of \$500,000 being returned to NSF in a settlement agreement. The involved institution also agreed to take specific actions to strengthen management controls pertaining to compliance with Federal rules. The second investigation involved research misconduct, and resulted in a principal investigator debarred from future Federal funding at all agencies as well as additional sanctions. Ms. Lerner noted that OIG is receiving an increasing number of serious research misconduct allegations.

As discussed at the NSB meeting in August 2008, issues of accountability and research integrity are becoming increasingly important in the international context. The Organization of Economic Cooperation and Development (OECD) Global Science Forum Coordinating Committee for Facilitating International Research Misconduct Investigations issued a report in April 2009. OIG took a leadership role in that activity. Dr. Larry Weber, Director, Office of International Science and Engineering (OISE), provided a report on what NSF is doing in relation to research integrity in an international context. In consultation with the OIG, NSF will continue efforts related to international research integrity in order to develop materials and best practices, enhance training and outreach activities, and engage a variety of domestic and international stakeholders.

Lastly, Dr. Arvizu acknowledged that CPP discussed the need to rethink the NSB delegation thresholds, and he will work with CPP and the Board Office before the May 2010 meeting to develop a plan on how best to address this issue.

c. Committee on Education and Human Resources (CEH)

Dr. Camilla Benbow reported on behalf of Dr. John Bruer, CEH chairman. She stated that the committee reviewed the latest draft of the STEM Innovators report. The revised draft reflects many of the previous suggestions made by the *ad hoc* Innovators Task Group including improved clarity and prominence of the “STEM Innovators” definition, weaving the research agenda into the three keystone recommendations, and stressing the need for opportunities early in elementary school for talented students.

Committee members offered a number of comments regarding the report’s content at the meeting. Specifically, members noted that the report should stress the importance of finding ways to identify and support STEM talent in a variety of environments; consideration should be given to “bridge” initiatives that would ultimately enable talented students from less privileged environments to compete successfully, for example, through mechanisms such as summer enrichment programs, as suggested by Dr. G. Wayne Clough; the report should acknowledge the role that classroom teachers could play in encouraging STEM talent and include information to assist teachers in identifying STEM talent in the very early school years; continued attention should be given to the overall STEM learning and innovation ecosystem; and the report should underscore both formal and informal educational experiences for fostering STEM talent. Dr. Galloway informed the committee about the establishment of a pilot STEM center in Washington state and suggested that the new center offer an opportunity to correlate this report’s findings and recommendations.

A number of members praised the improvements found in this draft, and recognized Dr. Matthew Wilson, Board Office staff, for his significant contributions to the drafting of the report. The committee was briefed on the milestones and timeline to complete the report. A revised draft, that incorporates comments from the CEH meeting discussion, will be forwarded to the full committee. After incorporating any additional CEH member comments, an updated draft will be sent out to the full Board for comment. Once the full Board has had the opportunity to provide comments, the draft will then be sent to the expert panelists for review. Following their input, the *ad hoc* Innovators Task Group will come back to the full Board with a final report in May 2010 for approval.

The committee approved the amended charge and workplan for the Expert Panel Discussion on Preparing the Next Generation of STEM Innovators, which includes an updated schedule. The two basic changes are (1) the timeline now projects a final approval date of the report in May 2010, with publication during summer 2010; and (2) the report will be sent to the expert panelists for review instead of releasing it for public comment. Based on this recommendation:

The Board unanimously APPROVED the revised charge and workplan of the Expert Panel Discussion on Preparing the Next Generation of STEM Innovators (NSB-08-82, Revised January 19, 2010; Board book page 197).

The committee also discussed STEM education research with three distinguished guests from the Department of Education’s Institute of Education Sciences (ISE). The informal panel was composed of Dr. John Easton, IES Director; Mr. Jon Baron, Vice Chairman, National Board for

Education Sciences (NBES), which helps set IES research priorities; Ms. Norma Garza, NBES Executive Director; Dr. Bement, a member of both NBES and NSB; and Dr. Ferrini-Mundy, Acting EHR Assistant Director. Dr. Easton and Mr. Baron began the discussion by providing information about IES's goals and future directions as well as the recent findings of IES-supported research that examined the impact of specific education interventions. According to IES findings, one of the key lessons learned is that, despite the expectations of researchers and practitioners, many of the studied interventions have had little to no positive educational impact. Those findings underscore the need to conduct research, not just to assess educational programs, but to understand the factors influencing successful implementation.

Several of the panel members pointed to the need to comprehend the social and behavioral factors that foster successful initiatives. Although the panel recognized the impact that effective teachers have, IES found that the studies do not clearly identify individual factors that differentiate between effective versus less effective teachers. The committee and panel explored areas of common interest such as research on pre-service teacher training in math and science, facilitating efforts to get information and resources to practitioners, studying schools as social organizations, rigorous assessments of programs. They also discussed NSF's and IES's relative strengths and each organization's respective contributions to such efforts. There was consensus that NSB, NSF, and IES should continue to exchange information and further explore areas for possible future collaboration.

d. Committee on Science and Engineering Indicators (SEI)

Dr. Louis Lanzerotti, SEI chairman, reported that the committee heard accounts of the successful rollout of *Indicators* and the *Digest* on January 15, 2010, and follow-up activities. The committee was grateful to OSTP for hosting this well-attended event and to the Board Office staff, particularly Dr. Robinson, for working on the event arrangements. [See also: page 4]

Mr. Rolf Lehming, SEI Executive Secretary and Director, Division of Science Resources Statistics (SRS), Directorate for Social, Behavioral, and Economic Sciences (SBE), gave a video press briefing (Press Release 10-009, "NSF SEI 2010 Program Director Rolf Lehming Briefs Journalists on the Contents of SEI 2010"), now on the NSB Web site, in advance of the rollout, which enabled the press to prepare accurate stories for the release of *Indicators*. The *Wall Street Journal*, for example, published an article on *Indicators* within minutes of the start of the rollout due to this advanced embargoed press briefing. At the rollout, Mr. John Gawalt, SRS Program Director, provided a demonstration of the Web version of *Indicators* and the *Indicators Digest*. Dr. Lanzerotti thanked the Board Office, SRS, and the Office of Legislative and Public Affairs (OLPA) staffs for their efforts.

Dr. Lanzerotti also reported that the committee heard brief reports on post-rollout activity. He noted that Mr. Lehming described his briefing for Dr. Holdren, who regularly used *Indicators* in teaching his classes at Harvard and who praised the *Digest* as a model of Government transparency, as well as his briefing to the Senate Commerce Committee staff. Dr. Lanzerotti noted that Dr. Robinson was in the process of arranging a larger and more formal briefing for congressional staff from both houses of Congress to take place after mid-February.

Ms. Lisa Joy Zgorski, OLPA, provided details of media coverage of *Indicators* and described OLPA's efforts to make *Indicators* a more widely used resource for journalists who write stories affecting science and engineering, the economy, and education. Mr. Gawalt reported on Web site activity for *Indicators* and the *Digest* - 362,000 page views (over 10 percent of the total NSF Web site activity) for *Indicators*, and 32,000 views of the *Digest* (up from 13,000 in 2008). The data testifies to the success of the *Digest* experiment that the Board launched 4 years ago. The *Digest* is also available on pocket devices.

Phase 2 of the *Indicators* rollout will take place at the AAAS Annual Meeting in San Diego on February 19, 2010 at 3:00 p.m. Drs. Beering, Bement, Griffiths, and Lanzerotti would be the presenters again. This phase will feature a rollout of the Board's Companion Piece, *Globalization of Science and Engineering Research (NSB-10-3)*. Dr. Lanzerotti reminded Board Members that the Companion Piece publication was embargoed until public rollout on February 19, 2010. The rollout will also feature the state data tool for mining the *Indicators* data on individual states.

Dr. Lanzerotti also reported on activity related to data in *Indicators*, and stated that a contractor for the Board Office is developing a Web-based interactive tool that will include indicators of particular interest to the education community. SEI will be reviewing both the Web design of this tool and a list of indicators that are planned for inclusion. Dr. Lanzerotti reminded committee members to send suggestions, including proposed additions and deletions of indicators and comments on the tool, to him with copies to Ms. Jean Pomeroy and Ms. Jennifer Richards, Board Office staff. In the next cycle of *Indicators*, a similar tool is planned for industry and business communities.

Finally, Dr. Lanzerotti noted that committee members shared ideas about additional outreach activities to interested communities, including the education research and practice community, state policymakers, international business, and science and engineering development organizations.

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

Dr. Kelvin Droegemeier reported for the Joint CPP-CSB committee and stated that the meeting focused on two items: the annual NSF Facilities Plan and the annual timeline for integration of the Board Major Research Equipment and Facilities Construction (MREFC) process with the NSF budget process.

Dr. Cora Marrett, Acting NSF Deputy Director, and Dr. Mark Coles, Deputy Director for Large Facility Projects, gave a presentation on the NSF Facility Plan. The presentation summarized the assessment process that NSF uses to evaluate candidate projects for future consideration, 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 differences. Dr. Coles also showed projects in the FY 2011 MREFC Budget Request, indicating the estimated

commitment for construction efforts of nearly \$2 billion through 2016. The durations of project construction were discussed relative to funding profiles.

Dr. Barry Barish noted NSF's progress in the planning of MREFC projects, and the next step towards further improvement was in the area of estimating operating costs. He stated that planners need to understand the impact of design decisions on the day-to-day operation in cases such as energy usage. Board Members also noted that it would be helpful when reviewing the projects in more detail to have rebaselining events identified along with a notation as to whether additional funding was required to continue the construction efforts.

Dr. Droegemeier noted the need to ensure that Capitol Hill remains apprised of all the important updates that NSF makes to these processes. Dr. Bement informed the committee that OLPA has been engaged in ongoing dialogue with the Congress' authorization and appropriations committees as well as OMB regarding these issues. Mr. Reilly commented that a level of complication exists when NSF collaborates with other agencies or also international partners, and Dr. Bement responded that it is to NSF's advantage to have a controlling stake in the projects.

For the annual timeline for integration of the Board MREFC process with the NSF budget process, the joint committee discussed a proposed revision to the timeline that was agreed to at the December 2009 CPP meeting (NSB/CSB-09-55). One significant change to this timeline was the addition of a CSB teleconference in January, preceding the rollout of the President's Budget, and allowing CSB to be aware of any late changes to the budget, particularly related to the MREFC account. The committee approved the revision to the timeline (NSB/CSB-10-11, Board Book page 47).

Dr. Droegemeier thanked Mr. Reilly, CSB chairman, for his help and support with this joint endeavor.

f. Committee on Programs and Plans (CPP)

Dr. Kelvin Droegemeier, CPP chairman, reported on two items of interest:

Thresholds for Activities and Items Coming before CPP. Under current policy on award thresholds for NSB review, the Board could be reviewing a large number of awards in May 2010. Part of the issue is to ensure enough time on the CPP agenda for other activities that are within the CPP charge, and give "due diligence" to the important actions that come before CPP for approval, which are important to NSF and the scientific community. As reported by the A&O chairman, CPP will work with A&O on a plan for looking at these thresholds.

Cost Policy Update. Dr. Droegemeier reminded the Board that CSB had a Task Force on Cost Sharing, which was established in October 2007 [and discharged at the February 2010 meeting]. The task force wrote two reports, one that was in direct response to the COMPETES Act that was released in February 2008, and the second report, *Investing in the Future, NSF Cost Sharing Policies for a Robust Federal Research Enterprise* (NSB-09-20), was published in August 2009. NSF has since been working on implementation. Dr. Droegemeier asked if there was anyone

available to provide an update, and Ms. Jean Feldman, Head, Policy Office, Division of Institution Award Support (DIAS), Budget, Finance, and Award Management (BFA), updated CPP on the eight recommendations provided to NSF in the report. DIAS has been working closely with OMB, which has been responsive and helpful in implementing these policies. Dr. Droegemeier thanked Ms. Feldman and NSF staff for making progress on this issue.

Dr. Droegemeier also reported that CPP heard a number of reports on information and discussion items:

Access to Laser Interferometer Gravitational-Wave Observatory (LIGO) Data by the Broader Community. Dr. Edward Seidel, Acting MPS Assistant Director, presented an update on this information item. LIGO developed a White Paper on data policies and submitted it to NSF program staff for review. Dr. Seidel gave an update on the contents of that White Paper and the subsequent responses and recommendations by NSF, which included requirements for data access. LIGO will submit a data management plan within a year. Dr. Lanzerotti noted that the issue of data access brings up two broader issues related to policy on data: minimizing operational costs through early planning and managing the international collaborations to ensure that NSF can accomplish the goals of these projects even if issues exist with some of the partners. The newly formed Task Force on Data Policies will be discussing data policy in more detail, particularly the issues raised by Dr. Lanzerotti.

Deep Underground Science and Engineering Laboratory (DUSEL) Preliminary Design Effort. Dr. Seidel gave an information update on the preliminary design effort for DUSEL. He informed CPP that the design and development of the potential experiments were well underway and that the National Academy initiated an independent review, which will be published in a February 2011 report. DUSEL is a joint NSF-DOE collaboration, and the Joint Oversight Group signed an agreement in December 2009 that outlined the joint responsibilities for the facility. OSTP is engaged to help guide the joint planning process.

Dr. Lanzerotti asked about the levels of collaboration with DOE, and how payment for the various components will be determined. Dr. Joseph Dehmer, Director, MPS Division of Physics (PHY), noted that the design work is being done jointly to determine the overall costs, but specific costs are still to be determined. Further information will be available after the Preliminary Design Review (PDR) is complete. Dr. Dehmer also noted that both agencies and DUSEL met as a group last week to address optimization issues and cost minimization. An update on this item is anticipated at the August 2010 Board meeting.

Update on NSF's Cyberinfrastructure Vision for 21st Century Discovery (NSF-07-28).

Dr. Seidel presented an update on this discussion item. The Board and CPP were actively engaged during the development of this report. Dr. Seidel presented information on how science is being revolutionized by cyberinfrastructure and how NSF is preparing to respond to new driving science questions. The Office of Cyberinfrastructure (OCI) and CISE are taking lead roles although all units at NSF are involved. Dr. Seidel reported that OCI and CISE have had meetings regarding cyberinfrastructure vision and are well positioned to lead this effort. The community is also engaged in the planning process of this effort. CPP looks forward to hearing more about those efforts in the future.

National Center for Atmospheric Research (NCAR) – Supercomputing Facilities. Dr. Sara Ruth, Program Coordinator, Division of Atmospheric and Geospace Sciences (AGS) (GEO), presented an information update on the NCAR Supercomputing Facilities 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 the management and operation of NCAR, which addressed power and space limitations for the growth of computing at NCAR, but did not include funding for relocation. In September 2009, UCAR and the University of Wyoming submitted a plan to construct this new facility with a proposed project budget of \$75 million, which includes \$20 million from the Wyoming partners. The project had a preliminary design review in October 2009, and will undergo a final design review in March 2010. GEO anticipates bringing an action item before the Board at the May 2010 meeting for an increased award authorization for the construction of this facility.

Plan to Request a Renewal Proposal from Florida State University for Operations of the National High Magnetic Field Laboratory (NHMFL). Dr. Seidel and Dr. Guebre Tessema, Program Director, MPS Division of Materials Research (DMR), reported on this information item. Since its founding in 1991, NHMFL has become what is widely considered to be the leading high magnetic field laboratory in the world. An annual review in FY 2010 looked at recompetition and the operations of the facility and deemed it was well managed. NSF agreed that the facility meets the expectations for stewardship of Federal funds.

The “Mag Lab” has had three 5-year renewals since it began operation. MPS expects a renewal proposal in September 2011, and will evaluate proposals through spring 2012 before bringing an action item to the Board in 2013. The committee discussed the current Board policy and the requirement for recompetition of every award. After analyzing the current policy, CPP agreed that this award should be recompeted. The Board requested a report from NSF management on internal NSF guidance regarding implementation of the Board policy on recompetition.

Extension of Gemini Cooperative Agreement. Dr. Seidel and Dr. Craig Foltz, Acting Division Director, MPS Division of Astronomical Sciences (AST), presented an information item on the update of the cooperative agreement for the management and operations of the Gemini Observatory. It consists of twin 8-meter optical/infrared telescopes – Gemini South in Chile and Gemini North in Hawaii. The Association of Universities for Research in Astronomy (AURA) is the managing entity for Gemini Management and Operations. The current cooperative agreement with AURA expires in December 2010.

The Gemini board determined that the cooperative agreement should be extended rather than competed due to ongoing discussions among international partners. In December 2009, the United Kingdom communicated its decision to withdraw from the partnership in 2012, which will result in a cut of approximately 25 percent in the annual Gemini management, operations, and instrumentation budget. The Gemini board plans to hold a retreat in mid-March 2010 to discuss the Gemini Observatory’s plans and possible changes to the management structure and operations model. Given the expiration of the current cooperative agreement and the 3-year ramp-up required for a “soft landing” of the observatory, an extension of the cooperative agreement is required. MPS expects to bring an action item before the Board at the August

2010 meeting, and the program is committed to a recompetition of the Gemini management in mid-2013.

Experimental Program to Stimulate Competitive Research (EPSCoR) Research Infrastructure Improvement Track I (RII-T1). Dr. Henry Blount, Head, EPSCoR, presented this information item to CPP, and alerted the Board to award recommendations coming to the May 2010 meeting for up to 14 EPSCoR action items.

CPP asked a number of questions about the program, including the number of investigators who graduated from EPSCoR funding programs and are now competing in regular research grant pools. Dr. Blount will provide further information on this subject to the Board. Dr. Leshner addressed an issue previously raised by Dr. Gulari regarding EPSCoR's policy on whether using funds intended to build infrastructure could be appropriately used to hire personnel. Dr. Blount responded that EPSCoR's infrastructure - both physical infrastructure as well as human infrastructure - is important to increasing research competitiveness and building capacity, and would include hiring personnel within the context of this award.

Academic Research Infrastructure Recovery and Reinvestment (ARI-R2) Program. Dr. Stephen Meacham, Senior Staff Associate, Office of Integrative Activities (OIA), presented an information update on ARI-R2). The program is intended to repair or renovate existing research/research training facilities, and NSF was given \$200 million from the ARRA funds for this purpose. NSF ran a competition, received 495 proposals in August 2009, and is currently in the process of negotiating for awards. The program expects to bring one global award recommendation for an ARI project before the Board at the May 2010 meeting.

[Although listed on the CPP agenda, the information item on DataNet was not addressed at the CPP meeting.]

CPP Subcommittee on Polar Issues (SOPI)

Dr. Kelvin Droegemeier reported for Dr. Jon Strauss, SOPI chairman, and stated that Dr. Karl Erb, Director, Office of Polar Programs (OPP), updated the committee on recent activities in the Antarctic including a dedication of the joint New Zealand-U.S. wind farm designed to provide 100 percent of Scott Base's and 10 percent of McMurdo Station's electrical requirements. Dr. Erb also reported on the commemoration of the only nuclear-power plant to operate in Antarctica, and recent visits by congressional staff members. DOE Undersecretaries, Drs. Kristina Johnson and Steven Koonin, as well Dr. G. Wayne Clough, Secretary of the Smithsonian, participated in two dedication ceremonies and discussed opportunities for increasing the U.S. Antarctic Program reliance on renewable energy.

Additionally, Dr. Erb reported on plans to convene an external panel to identify infrastructure and logistic support that will be required for meeting the evolving frontiers of Antarctic research over the next 2 to 3 decades. Board Members discussed identifying the appropriate science drivers for future needs and ways to make plans for the future. Dr. Droegemeier noted that Board Members were willing to assist in this endeavor, and suggested that Dr. Erb work with Dr. Strauss to gather NSB input for the study.

Finally, Ms. Dana Topousis, OLPA Group Leader for Media and Public Information, reported on a successful recent media expedition in Antarctica that included representatives from a wide variety of media types including newspapers, magazines, radio, TV, and the Internet.

g. Committee on Strategy and Budget (CSB)

Mr. Arthur Reilly, CSB chairman, extended his appreciation to Dr. Droegemeier and his efforts put forth for the Joint CPP-CSB meeting.

Mr. Reilly reported that Dr. Bement provided CSB with an update on the developments concerning the NSF's FY 2010 appropriation. He noted that since the December 2009 meeting, the NSF appropriation was signed by the President, with NSF's funding level 2 percent below the original request level. The Agency Operations and Award Management (AOAM) account funding level was 6 percent below the request level. Board Members again expressed concern over the low funding level provided for this account. Dr. Bement agreed, noting that the funds primarily support salaries and the role of NSF staff in carrying out the NSF mission, including executing the awarding of research grants, contracts, and acquisitions. Dr. Bement relayed that he was more encouraged with recent interactions and discussions with OMB regarding the developments of the FY 2011 request with respect to AOAM. CSB noted it would continue to lend support in any way possible to promote the need for sufficient AOAM funding to successfully execute NSF's mission.

Dr. Bement also provided an overview of the FY 2011 Budget Request to Congress, which was released to the public and delivered to Capitol Hill on February 1, 2010. The FY 2011 Budget Request contains an 8 percent increase for the agency over the FY 2010 appropriation with funding totaling \$7.4 billion. The funding includes an increase of almost 10 percent in AOAM. The Budget Request keeps NSF on a trajectory to double the budget by FY 2017. The NSF Budget is built around the Administration's priorities, and Dr. Bement highlighted several of them including: the Graduate Research Fellowship Program, the Faculty Early Career Development Program or CAREER, Climate Change Education, and the Advanced Technological Education program. Additionally, he reviewed the many programs that NSF would continue to support along with the new efforts that would be undertaken as described in the FY 2011 Budget Request. CSB members congratulated Dr. Bement and the NSF staff for putting an exciting package together to OMB and its successful submission to Congress.

Mr. Reilly also noted that Dr. Marrett reported for NSF on ARRA spending, and provided succinct information on recent developments and the status of NSF's expenditure of ARRA funding. Dr. Marrett again 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 the following solicitations: ARI program, Major Research Instrumentation (MRI) program; and the Science Master's program. The solicitations for these programs were released, and the proposals received in response to them were at various stages of the review and decision process. It was anticipated that approximately 120 awards will be made for ARI, approximately 220 awards for MRI, and approximately 22 for the Science Master's program.

Dr. Marrett noted that although NSF cannot report the level of job creation numbers as a result of ARRA funding that such agencies as Department of Transportation can claim, NSF's numbers are significant within the academic community. She reported that the second quarter results show NSF awards resulted in the creation of 2,800 jobs. Those are the "direct" jobs that can be tracked, and they do not account for the "indirect" jobs. The successful experience NSF has had with the use of ARRA funds will position NSF favorably in the future. Dr. Marrett informed CSB that strong interest in the ARI program was demonstrated within the community with respect to academic infrastructure and to the need to evaluate the most appropriate funding sources for these substantial needs. She welcomed input from the Board on this subject.

Dr. Clifford Gabriel, Acting MPS Executive Officer and chairman of the NSF Strategic Plan Working Group, gave an update on the NSF's progress on revising NSF's Strategic Plan. He reiterated the tight timeline under which the revision needs to occur for the final draft to be submitted to OMB before the May 2010 NSB meeting. This timeframe would allow the administration to use the Strategic Plan to inform the FY 2012 Budget development process. The NSF Strategic Plan Working Group is considering revisions to NSF's mission and vision statement as well as modifications to the high level strategic goals.

CSB members commented that infrastructure and education should be highlighted in the document. It was also noted that although the vision statement being considered was inspirational, it should also convey the notions of action, achievement, and scientific progress on the part of the Nation and NSF. Although input from CSB was submitted earlier in the process, there was strong agreement among the committee members that additional input should be provided as well. There will be other opportunities for the Board to provide input to the draft revisions before they are submitted to OMB. Specifically, before the May 2010 meeting, Mr. Reilly will seek input from the CSB members and others in the next 2 weeks concerning the information provided at the meeting, and a teleconference will be organized by the Board Office for further discussion on the Strategic Plan and the interaction with the NSF staff. The Executive Committee can then consider approving, first, the initial draft Strategic Plan, and subsequently, the final plan for NSF's submission to OMB within the timeline

Finally, Mr. Reilly reported that Dr. Robinson provided an update on the NSB Budget under a standing agenda item that was initiated at the December 2009 meeting. Dr. Robinson noted that in addition to the \$500,000 increase the Board received in the FY 2010 appropriation, the FY 2011 request contained an additional \$300,000 increase for the Board. The 20.1 percent during 2 years contrasts with the previous 5 years where no increases occurred. The additional funds in the FY 2011 request would cover the additional costs associated with a number of items including: a research facilities policy analyst to support the added work for the portfolio review of SCF, substantial technological and electronic records content management and workflow upgrades to include a searchable Plenary Session minutes by the public and versioning control of Board draft documents, development of a database of former Board Members that could include contact information, a secure Web site for Board Members to replace the existing one that uses technology no longer supported by the NSF IT staff, digital recording of meetings to ensure Sunshine Act compliance and perhaps permit Webcasting of meetings, and a full year salary for the NSB legal counsel.

In closing, Mr. Reilly reported that CSB raised the issue of ensuring that sufficient time is available to have thorough discussions on all the critical topics mentioned in CSB, as well as in other NSB committees. Mr. Reilly agreed to bring this topic to the attention of the full Board and to request that the Executive Committee consider the structure of future meetings. Recognizing the complexity of this issue, he also suggested that any consideration include a thorough review of the potential options and their pros and cons.

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

Dr. Patricia Galloway, 60ANN chairman, reported on the task force's progress on various activities and events associated with the 60th Anniversary.

Dr. Paul Oh was the first of three "Voices from the Future" Distinguished Speakers to present comments at NSB meetings. She stated that Dr. Oh's presentation at the Plenary Open Session earlier in the day was interesting and engaging. Dr. Galloway noted that Dr. Oh's exciting work in robotics focused on K-12 STEM outreach and it was particularly important as it related to CEH Board activities. The video of Dr. Oh's presentation will be made available on the NSF Web site and the Research Channel, as well as his taped interview in NSF's Studio. She noted that the Board and the public look forward to future "Voices from the Future" speakers. [See also: page 2]

Ms. Karen Sandberg, 60ANN Co-Executive Secretary and OLPA representative, provided a status report on OLPA efforts. The "Sensational 60" compilation of notable scientific achievements was under review by agency officials. The "National Science Board – A History in Highlights, 2001-2010" was also under review. Several congressional-related draft documents were compiled, and plans were made for a flag to be flown over the U.S. Capitol on May 10, 2010 to commemorate NSF's birthday. Ms. Sandberg reported that OLPA established an NSF Web site where NSF and NSB staff can find the 60th Anniversary logo as well as 60th Anniversary templates for PowerPoint slides for use in presentations. The URL for this Web site is: <http://www.inside.nsf.gov/60th>. Ms. Sandberg also noted that a short piece on the 60th Anniversary was featured in the "NSF Current," NSF's online e-newsletter with 20,000 subscribers.

Reporting for Mr. John Tsapogas, Chairman of the NSF 60th Anniversary Working Group, Ms. Tracy Gorman, Working Group Co-chairman, provided an update on its efforts. An NSF staff memorandum announcing the commemoration of NSF and NSB on their 60th Anniversaries and signed by Drs. Bement and Marrett would be distributed to NSF staff later that day [February 4, 2010]. She noted that 60th Anniversary banners would be hung in NSF buildings, and a display case would be set up to promote the celebration. Ms. Gorman also reported that plans were being discussed to have NSF staff-focused events during the year. She mentioned that 2010 is also the 35th anniversary of the Waterman Award, and there may be events associated with that important honor.

Dr. Galloway announced the upcoming Symposium entitled, "The Future of NSF on Its 60th Anniversary," which would be held at the AAAS Annual Meeting in San Diego on Saturday, February 20, 2010 from 1:30 to 4:30 p.m. The Symposium would bring together a distinguished

panel: the present NSF Director, Dr. Bement, and four former NSF Directors, Mr. Erich Bloch, and Drs. Rita Colwell, Neal Lane, and Walter Massey - representing some 25 years of NSF leadership and expertise. Dr. Beering would be the Discussant, and she would be the Moderator. OLPA has arranged for a celebratory birthday cake to be served at the NSF Booth 701 at 5:00 p.m. directly following the Symposium.

Ms. Ann Ferrante, Co-organizer for the Symposium and 60ANN Co-Executive Secretary, reported that the January 4, 2010 teleconference with Symposium participants was helpful in coordinating speaker presentations and other logistics. Copies of the Symposium presentations will be provided to the Symposium participants within the next few days. Ms. Ferrante also noted that the rollout of the Companion Piece to *Indicators* would take place at the AAAS meeting on Friday, February 19, 2010 at 3:00 p.m., and Board Members would also be notified about this media event. AAAS will provide an audio recording of the Symposium, and OLPA has arranged to have the Symposium videotaped, both of which will be incorporated in NSF and NSB Web sites.

Dr. Galloway thanked everyone for their hard work and commitment to the commemorative activities during the 2010 Anniversary year.

Dr. Beering adjourned the Open Session at 2:20 p.m.

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