Sunset over Cerro Tololo Inter-American Observatory in La Serena, Chile — part of the National Optical Astronomy Observatories supported by the National Science Foundation.

NSF Collection

Other Reporting Requirements

Management and Performance Challenges

As required by the Reports Consolidation Act of 2000, the following is the Inspector General's Statement Concerning NSF's Most Serious Management and Performance Challenges. It is followed by the Director's Response.
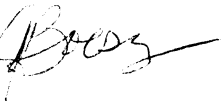
NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

nsf

January 4, 2001

OFFICE OF
INSPECTOR GENERAL

To: Dr. Rita R. Colwell
         NSF Director

From: Christine C. Boesz, Dr. P.H.
         Inspector General

Subject: IG's Statement Concerning NSF's Most Serious Management and Performance
         Challenges

As you may be aware, the Reports Consolidation Act of 2000 (P.L. 106-531) was signed into law
on November 22, 2000. This legislation authorizes Federal agencies to consolidate several
statutorily required financial and performance management reports into one annual
accountability report. The Act also requires that the Inspector General (IG) provide the agency
head with a statement summarizing what the IG considers to be the most serious management
and performance challenges facing the agency and briefly assess the agency's progress in
addressing those challenges. The Act requires that the IG's statement be included in the
agency's accountability report and allows the agency head to comment, but not modify the IG's
statement.

In accordance with this law, my statement of NSF's most serious management and performance
challenges is provided in the attached document. This statement identifies the same challenges
that we provided to the Senate Committee on Governmental Affairs on November 30, 2000, in
response to a similar request which I have already discussed with you. The only differences are
that this statement refers to the challenges as "management and performance" challenges as
opposed to management challenges, includes minor editorial changes to reflect the statement's
current issuance date, and clarifies NSF's desire to diversify its peer review community. These
minor changes are highlighted on the attached statement. Although we do not request a response
from you to this letter, the Act does afford you the opportunity to include your comments in the
accountability report. It is my understanding that Mr. Cooley is aware of the requirements of this
new legislation and will be providing you with a draft response for your review.

Please do not hesitate to contact me regarding any questions or concerns you may have with this
statement.

Inspector General's Statement Concerning
NSF's Management and Performance Challenges

NSF celebrated its 50th year in 2000. I believe it continues to be one of the federal government's most cost-efficient agencies. It is a leading proponent of streamlined management practices and leads in the use of advanced information technologies. As we begin the new millennium, NSF remains the only federal agency dedicated to supporting basic scientific and engineering research and education programs at all levels and in all fields pertaining to science and engineering.

I want to emphasize that, in my opinion, NSF does not have any serious management problems. As an innovative government agency, dedicated to maintaining American leadership in discovery and the development of new technologies across the frontiers of scientific and engineering knowledge, NSF has management challenges which are being acknowledged and addressed. The ten challenges which the Office of Inspector General has identified through audits and general knowledge of NSF's operating polices and practices fall into four broad categories that are consistent with NSF's own assessment of its management control challenges. The four areas are 1) System and Data Management, 2) Program Management, 3) Staffing and Human Resource Management, and 4) Security and Controls. I am pleased to report that NSF continues to improve its operations and responds enthusiastically to our recommendations in all of these areas.

The specific challenges that I believe will be most important over the next year are described below, grouped by NSF's management control challenges.

1. System and Data Management

FastLane: In the FY2001 budget, OMB identifies streamlining and simplifying grants management as one of the most important management challenges facing the federal government. At NSF, the development and implementation of FastLane, which began in 1994, has moved the agency closer to the goal of establishing a widely accessible paperless proposal and award process. In many respects the implementation has been successful and NSF serves as a leader within government in electronic innovation. The increase in the use of FastLane by those seeking grants each year has been encouraging and has undoubtedly helped contribute to the increase in productivity NSF has achieved in recent years. However, problems remain, as reflected by the inability of the help desk to cope with the high volume of incoming questions and problems. Because FastLane serves as the primary interface between NSF and its grantees and is critical to many of NSF's administrative plans and goals, we believe that management must continue to monitor its progress and assure that the system is as user-friendly and reliable as possible.

GPRA Data Quality: GPRA seeks to improve the effectiveness, efficiency and accountability of federal programs by requiring agencies to set goals for performance and report on annual performance compared with the goals. In addition, it requires agencies to "describe the means to be used to verify and validate measured values" of performance in their performance plans. A recent GAO study, <u>Managing for Results: Opportunities for Continued Improvements in</u>

Agencies Performance Plans (GAO/GGD/AIMD-99-215), said that a key weakness of NSF's FY2000 Performance Plan is that it "provides limited confidence in the validation and verification of data." Meanwhile, the agency has contracted with several firms to assist in validating the performance data it reports. However, if uncertainty persists about data validity, decision-makers will be reluctant to rely on the information, and its usefulness will be diminished.

2. Program Management

Merit Review: Because of its importance to the success of NSF's mission, the merit review system remains on our list of management challenges. Operating a viable, credible, efficient merit review system is one of four critical factors identified by the agency in managing for excellence. NSF must continue to ensure that: reviewers correctly apply NSF's review criteria; due consideration is given to ideas, individuals and institutions that have not received past support; and that the process is fairly and effectively administered.

In particular, we believe that the agency has opportunities to improve in two areas. We believe that NSF should enhance its effort to expand the peer review community to ensure diversity with respect to race, gender, geography, and type of school, providing the chance to participate to all who are qualified. In our view, the selection of peer reviewers is an opportunity for NSF to reach out to underrepresented segments of the scientific community and educate them about the process of obtaining federal support for their research. This will help to generate proposals from those who may have worthy research ideas but are unfamiliar with, or intimidated by, the system. Secondly, we are concerned about the agency's ability to maintain the confidentiality of proposals in an electronic environment. As more proposal review functions migrate to the internet, NSF must be able to ensure that the intellectual property contained in a proposal is secure.

Cost Sharing: In accordance with Congressional requirements, NSF requires that each grantee share in the cost of NSF research projects resulting from unsolicited proposals. In addition to this statutory requirement, NSF can require additional cost sharing when it believes there is tangible benefit to the award recipient, such as infrastructure development or the potential for program income. When cost sharing is provided for in the approved award budget, it is presumed that the funds are necessary to accomplish the objectives of the award. The commitment becomes a condition of the award and subject to audit to the same extent as the costs borne by NSF. Therefore, if promised cost sharing is not realized, then either the awardee has not met its programmatic objectives, or the project costs less than originally projected. In either case, NSF should have at least a portion of its funds returned to it.

We have been finding significant problems with awardees who are failing to meet their cost sharing requirements. In the past semi-annual period, we found several awardees with significant problems in this regard, discussed in more detail in our September 2000 Semiannual Report. We are continuing to focus our efforts in this area and are currently conducting a broad review of cost sharing at numerous institutions. Because of the importance of these research efforts to the scientific and engineering community, and the detrimental impact a shortfall can

have on a project, we consider improvements in administering cost sharing to be among the most important priorities for NSF management.

Award Administration: NSF's mission is to fund research and education in science and engineering by issuing different types of awards (primarily grants, contracts, and cooperative agreements) thereby strengthening U.S. science and engineering. Assessing scientific progress and ensuring effective financial/administrative management are critical elements in managing NSF's grant programs. Program officers in each of NSF's seven science Directorates are responsible for monitoring the scientific progress of NSF's grants while the Division of Grants and Agreements (DGA) and the Division of Contracts, Policy, and Oversight (CPO) oversee grantees' financial management of NSF awards.

At any one point in time NSF is administering as many as 30,000 ongoing awards. NSF relies on a total staff of 1,150 employees to carry out this oversight responsibility. This is in addition to their responsibility of soliciting and awarding approximately 10,000 grants and cooperative agreements annually amounting to over $3.5 billion. Given this sizeable workload, NSF is challenged to adequately monitor its awards for scientific accomplishments and compliance with the award agreement and federal regulations. For the most part, NSF relies on interim reports from grantees to monitor progress, but is unable to test the reliability of these reports. NSF also needs to establish a more coordinated oversight effort between its program officers and its grant and contract officers to ensure better sharing of information and more effective action to address compliance issues.

Management of Large Infrastructure Projects: NSF is increasing its investments in large infrastructure projects such as astronomy centers, research equipment, supercomputing databases, and earthquake simulators. The agency spends approximately $1 billion a year on these research facilities and equipment projects, with each of these projects costing several hundred million dollars. Projects of this scale and complexity are becoming more common for NSF, which historically has administered awards averaging less than $100,000 each. Successful management of these projects and programs requires a more disciplined project management approach. Management of these projects is particularly challenging for NSF because of its limited number of staff. Although NSF recently issued guidelines for managing these larger projects, the guidelines are interim and have not been fully tested for adequacy.

Management of U.S. Antarctic Program: NSF plays a leadership role among federal agencies involved in supporting research and logistics in the Antarctic through its Office of Polar Programs (OPP). Charged with managing all U.S. activities in the Antarctic as a single program, OPP not only funds research, but also is responsible for operating the infrastructure and logistics necessary to conduct scientific experiments in the harsh polar environment. In this role, it faces a number of unique challenges such as transporting and housing scientists and support staff, assuring their safety and health, protecting the near pristine polar surroundings, ensuring U.S. compliance with the international Antarctic Treaty, and promoting the national interest in maintaining an active and influential presence in Antarctica.

While OPP operates like other NSF directorates in making awards for polar research, its responsibilities do not end there. In providing science, operations, and logistics support to the

research projects it funds, it is significantly different than other NSF units. OPP staff must not only know the science, but must also be able to manage contractors engaged in delivering a broad range of services to the American scientific community located in a difficult and dangerous environment. Our audit work has focused on reviewing these activities because of their many inherent risks. From our perspective, NSF's polar programs involve not only a large expenditure of money, but also the safety of scientists and workers, environmental concerns, and the prestige of the U.S. government. The successful operation of the United States Antarctic Program requires certain management and administrative skills that are responsive to the special needs of Antarctic scientific research.

3. Staffing and Human Resource Management

Work Force Planning and Training: Although NSF has had healthy increases in its program responsibilities and budgets in recent years, salaries and expenses have remained relatively flat. NSF received an increase of 13.6 percent in its FY2001 budget; however an increase of only 6 percent was obtained for salaries and expenses. While we commend the agency for successfully controlling its administrative overhead, the small increases allocated for administration and management over the past few years raise questions about whether NSF can successfully manage future growth without adding more staff. Concerns about the adequacy of staffing come at a time when the government as a whole is facing succession planning and recruiting problems. In addition, NSF's reliance on the Intergovernmental Personnel Act (IPA) personnel, who serve on a term basis, poses a challenge to the agency to make certain that personnel are adequately trained to administer grants. We are planning audit work in this area to ensure that the agency has a reasonable strategy for managing its human capital.

Fostering a Diverse Scientific Workforce: NSF is committed to increasing the diversity of the nation's science and engineering workforce by embedding diversity concerns in all of its programs. In its strategic plan, NSF says it aims at new strategies for improving diversity and broadening participation in NSF-funded activities. NSF's most recent performance plan promises that the agency will begin implementing new strategies to increase diversity. NSF executives and managers frequently stress the importance of diversity in presentations to internal and external audiences. Because diversity programs are difficult to implement in a society challenged by economic, legal, and cultural constraints, NSF faces numerous challenges and should clearly define its diversity strategies and develop concrete steps (beyond giving general encouragement to its program managers) for attaining its goals in this area.

4. Security and Controls

Data Security: Electronic information and automated systems are essential to NSF's operations. Next year NSF will depend on its automated computer systems to manage over $4 billion in funds, receive and process over 35,000 grant proposals, handle over $3 billion in cash transactions to NSF awardees, generate its agency wide financial statements, and support a government wide website for federal financial management initiatives and activities. Therefore, it is imperative that NSF's systems are developed and operated with appropriate security controls to reduce the ever increasing risk of unauthorized access. NSF must be able to protect the availability, integrity, and confidentiality of its computer based information. Improvement is

most needed in the areas of access controls and change controls. Access controls limit or detect inappropriate access to computer resources, while change controls prevent unauthorized modifications to programs from being implemented. The audit of NSF's financial statements has identified several internal control weaknesses related to security of NSF's automated systems, although none were material or rose to the level of a reportable condition.

MEMORANDUM

DATE: January 26, 2001

FROM: Dr. Rita R. Colwell
Director

SUBJ: Response to the Inspector General's Statement of the National
Science Foundation's Most Serious Management and Performance
Challenges

TO: Christine C. Boesz, Dr. P.H.
Inspector General

I want to thank you for your memorandum dated January 4, 2001 on the National
Science Foundation's performance and management challenges as authorized
by the Reports Consolidation Act of 2000 (Public Law 106-531).

I welcome your assessment that NSF continues to be one of the federal
government's most cost-effective agencies and does not have any serious
management challenges.

Like many organizations, NSF faces a world changing more rapidly than ever
before. With change come performance and management challenges NSF must
address in order to sustain the high level of effectiveness in our business
operations. We pride ourselves on being the premiere federal agency to invest in
the people, tools and ideas that our nation needs for a 21st century research and
education enterprise.

The four broad areas of management and performance challenges that you have
identified; Systems and Data Management; Program Management; Staffing and
Human Resource Management; and Security and Controls are consistent with
NSF's senior management assessment of areas which require our attention to
assure improvement of our long-term operating performance.

As you know, some of these challenges are difficult. We have started to address
several of them with our workforce planning study and a recent independent
assessment of our GPRA validation and verification processes. I have
confidence that with these efforts, as well as recommendations from our various
advisory committees and the NSF Management Controls Committee, we will
develop solid strategic and implementation plans to address the challenges
before us. Also, as you point out, any plan to address these challenges should

identify the need and fulfillment of additional agency resources to keep pace with
our increasing workload.

I appreciate your insight into our agency management and performances
challenges and look forward to working with your office to effectively address
them.

Rita R. Colwell

Debt Collection Improvement Act of 1996

Net Accounts Receivable totaled $4,654,371 at September 30, 2000. Of that amount, $3,996,660 was receivable from other federal agencies. The remaining $657,711 was receivable from the public. NSF fully participates in the Department of the Treasury Cross-Servicing Program. In accordance with the Debt Collection Improvement Act, this program allows NSF to refer debts that are delinquent more than 180 days to the Department of the Treasury for appropriate action to collect those accounts. Additionally, NSF seeks Department of Justice concurrence for action on items over $100,000.

Civil Monetary Penalty Act

There were no Civil Monetary Penalties assessed by NSF during the relevant financial statement reporting period.

Prompt Payment Act

NSF continues to strive for the highest levels of electronic fund transfers (EFT) payments required by the Prompt Payment Act. Payroll, vendor and grantee payment transactions are made by EFT. Only payments made to foreign banks were made by paper check. Interest payments under the Prompt Payment Act in fiscal year 2000 were minimal.

Patents and Inventions Resulting From NSF Support

The NSF's Accountability Report also serves as the Foundation's Annual Report. As such, the following information about inventions is being reported in compliance with Section 3(f) of the National Science Foundation Act of 1950, as amended [42 U.S.C. 1862(f)]:

In FY 2000, the Foundation received 358 invention disclosures. Rights to these inventions were allocated in accordance with Chapter 18 of Title 35 of the United States Code, commonly called the "Bayh-Dole Act."