IV. OTHER REPORTING REQUIREMENTS

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Debt Collection Improvement Act of 1996

Net Accounts Receivable totaled $6,462,958 at September 30, 2001. Of that amount, $5,587,648 was receivable from other federal agencies. The remaining $875,310 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. Our FastLane system utilized for grants enables the grantees to draw cash as required for execution of the grant. Interest payments for commercial vendors under the Prompt Payment Act in FY 2001 were minimal.

Cash Management Improvement Act

In FY 2001, NSF had only one Treasury-State Agreement covered under the Act. NSF's FastLane system with grantee draws of cash make the timeliness of payments issue under the Act essentially not applicable to the agency.

Patents and Inventions Resulting From NSF Support

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 2001, the Foundation received 691 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."

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, followed by the Director's Response.

January 30, 2002

MEMORANDUM

To: Dr. Eamon M. Kelly
Chair, National Science Board

Dr. Rita R. Colwell
Director, National Science Foundation

From: Dr. Christine C. Boesz
Inspector General, National Science Foundation

As required by 31 U.S.C. § 3516(d), I am pleased to submit our annual statement summarizing what the Office of Inspector General considers to be the most serious management and performance challenges facing the National Science Foundation (NSF). As the result of September 11, we face a vastly different set of national priorities and a budget environment in which every dollar must be spent even more effectively than before. I continue to believe that NSF is one of the most cost-effective agencies in the federal government.

However, the challenges we have identified include some difficult issues that NSF will need to address in the near future to maintain its reputation as one of the best government agencies. Based on my discussions with NSF managers, I have every confidence that they understand the importance of these challenges and are taking proactive measures to address them. We look forward to working closely with the agency to preempt these potential issues and to remedy the existing ones.

The ten challenges which the OIG has identified through audits and general knowledge of NSF's operations fall into five general categories, four of which can be linked to the President's Management Agenda: 1) Strategic Management of Human Capital; 2) Improved Financial Performance; 3) Expanded Electronic Government; 4) Budget and Performance Integration. The fifth is specific to NSF programs.

1. Strategic Management of Human Capital

Workforce Planning and Training

The strategic management of human capital is recognized as an important priority throughout government and is an important element of the President's Management Agenda. This past year,

the General Accounting Office (GAO) also added human capital management to the government-wide high-risk list. NSF management has acknowledged the seriousness of its human resource management challenge. The agency is vulnerable to a wave of retirements in key areas as 63% of the agency's executive workforce, as well as a large percentage of the science and engineering staff, are eligible to retire within 5 years. Meanwhile NSF's budget for salaries and expenses continues to lag behind the growth of NSF's overall program budget. NSF's Management Controls Committee evaluated this issue as a medium risk, and warned that it could worsen in the not too distant future. The agency is expected to begin to address these issues as part of a 5 year plan it is submitting to the Office of Management and Budget (OMB). The plan will serve as a blueprint for enabling the agency to cope with the increase in workload that NSF has received during the past few years. As part of the OIG's FY 2002 appropriations bill, Congress requested that our office analyze the adequacy of the agency's staffing and management plan. Planning for our review is underway, and our final report is due in the summer of 2002.

In the interim, NSF reports that it is engaged in an effort to introduce fundamental changes in NSF business processes and practices, including redefining NSF position descriptions. The agency is also in the process of establishing an NSF Academy to provide all education and training needed by the agency. We view the development of a training program appropriate for NSF's needs as an urgent priority, particularly in light of NSF's dependence on Intergovernmental Personnel Act (IPA) personnel, who serve at NSF on a temporary basis and comprise a significant percentage of the workforce that requires continual training.

2. Improved Financial Performance

Management of Large Infrastructure Projects

In response to an OIG audit report, as well as concerns expressed by Congress and OMB, NSF began updating its policies and procedures during 2001 to strengthen the management and oversight of large facility projects. As part of this process, NSF developed a *Large Facility Projects Management and Oversight Plan*. NSF sought OIG input as it developed this plan, and we believe it is an important first step in ensuring that NSF's large facility projects provide appropriate stewardship over public funds, while not unduly constraining the freedom needed to pursue scientific research.

However, much work lies ahead. The plan constitutes a broad outline of NSF's intentions and more-detailed guidelines are required in order for corrective action to be effective. Congress has indicated its concern over the implementation of the plan and expressed a desire for NSF to demonstrate significant progress in implementing it before February 28, 2002. We will continue to monitor NSF's progress, particularly with regard to areas of accountability, authority, and post-award project management, to ensure that sound business and management practices are employed in advancing NSF's scientific goals.

Award Administration

At any point in time, approximately 1,150 NSF staff are engaged in administering as many as 20,000 active awards. This is in addition to their responsibility for soliciting and awarding approximately 10,000 new grants and cooperative agreements annually. While NSF has

demonstrated its efficiency in making awards, we believe that the agency should improve post-award monitoring by establishing written policies and procedures to ensure financial and administrative compliance.

In the course of performing financial and compliance audits on a variety of awardees, we have found that some are at greater risk for compliance problems than others. Since NSF staff resources are limited, factors such as award size, type of entity, and amount of experience with federal grants should be considered when determining which awardees should be accorded greater oversight. For awardees deemed to be higher risk, the procedures might include conducting a more rigorous analysis of their grant management systems prior to the start of an award, providing more-detailed instruction to high risk awardees, and monitoring award activity more closely to assure financial and administrative compliance. NSF's Division of Grants and Agreements (DGA) is developing a risk-management approach to post-award monitoring activities. We look forward to working with DGA on the development of new procedures that will address this challenge.

Cost Sharing

Cost sharing leverages the government's investment in basic research by obtaining contributions from grantees and others. In FY 2000 NSF made 3,111 awards that required cost sharing amounting to $508,516,513. Our audits of awardees continue to reveal problems with cost sharing that include shortfalls in contributions, instances of missing or insufficient documentation, and systems that are inadequate to ensure their proper accounting.

Given the large amount of these commitments, the failure to honor cost sharing obligations or to keep proper accounts can have serious consequences for NSF's awards. When an awardee promises cost sharing, it accepts an obligation to contribute a certain amount of money and/or resources to the project costs. The government requires that these funds be fully accounted for so it can determine whether the obligation has been fulfilled. Therefore, if promised cost sharing is not realized, either the programmatic objectives are not met or the project is not funded as originally projected. In either case, NSF has paid a larger share than what was agreed to and opportunities for the agency to fund other awards are curtailed. For these reasons, we believe that NSF should re-examine its policies on the reporting of cost sharing and resolving of any questioned amounts to ensure compliance with federal guidelines.

3. Expanded Electronic Government

Data Security

NSF faces the challenging task of facilitating an open research culture while protecting its critical information assets against unauthorized intrusion. Although NSF has enhanced its security program by establishing an Intrusion Detection Service and appointing a Security Officer, continuing efforts are needed to improve system security. Our review of NSF's information security program indicates that there may be weaknesses that increase security risks. NSF has concurred with our recommendations and has initiated corrective action.

We commend the agency for making many improvements to its innovative FastLane program in the past year. FastLane allows NSF's customers to use the Internet to exchange information with

NSF in the performance of a variety of tasks, including preparing and submitting proposals, proposal reviews and project reports. Given its vital role as the primary vehicle for transacting NSF business, we listed FastLane as a management challenge last year and emphasized the need for NSF to continue to monitor its progress, paying particular attention to making it as user-friendly and reliable as possible. NSF states that the problem in servicing requests for help from FastLane users was addressed through increased staff, better procedures, and improved on-line documentation.

However, NSF management needs to continue to address some important emerging issues. NSF is participating with other federal agencies in a project to provide grant applicants with a single information exchange portal for all grant-making agencies, called the "Federal Commons." The implementation of the system will begin in FY 2003 and will require significant commitments from NSF before it is operational. While the Federal Commons is under development, the agency is planning to continue to improve FastLane by increasing the number of critical agency functions it supports. In general, the rapid growth of FastLane and other information technology applications at NSF increases the need for an effective information security program.

4. Budget and Performance Integration

GPRA Data Quality

The President's Management Agenda outlines plans to formally link performance review with budget decisions beginning in FY 2003. This initiative complements the objectives of the Government Performance and Results Act (GPRA) enacted in 1993 to focus federal programs on performance. While NSF is making steady progress in complying with GPRA, the agency needs to evaluate and improve, as appropriate, both its formulation of GPRA measures and its verification of data in order to facilitate the integration of budget and performance information.

In a report issued in June 2001, GAO found that while most strategies for achieving NSF's key outcomes were generally clear and reasonable, some are vague and do not identify specific steps for achieving their goal. GAO also observed that NSF did not provide information on the strategic human capital management strategies necessary to achieve some of the outcomes.

In addition, the validity of NSF's GPRA data and outcome measures has not been firmly established. In order to address these concerns, which were raised by GAO in a report on NSF's FY1999 Performance Report, the agency retained a contractor to verify and validate selected GPRA performance data, including outcome measures. These measures are based on the reports of various external expert panels including the Committees of Visitors (COVs) and Advisory Committees (ACs), which conduct evaluations of program activities. Although the contractor concluded that NSF's processes were adequate, we found that the contractor did not assess the process used by the committees to make their determinations, nor did it evaluate the underlying data used by the committees in making their judgments. NSF states that it understands the importance of data quality and is implementing a COV data project that will substantially improve the information used by NSF committees. Our office is planning to conduct a review of the COV process during the current fiscal year.

Cost Accounting Systems

Good cost accounting information can help management make fully informed decisions based on evaluating the cost of an activity or project against its benefits. At present, NSF's information systems do not readily provide the basic cost accounting information needed to effectively manage and report on agency operations, such as the cost of NSF's various grantmaking activities (e.g., proposal processing, peer review, post-award administration) or large infrastructure projects.

The OIG's FY 2000 Management Letter Report recommended that NSF develop performance measures and goals that can be linked to NSF's budget, actual cost of operations, and the management challenges. NSF's ability to measure agency performance, link its costs to its results, and fully implement GPRA, is dependent on an effective financial and cost accounting system. Therefore, NSF should modify its accounting systems so they can capture total costs and readily supply total cost information useful to NSF management, the National Science Board, and Congress.

5. NSF Program-Specific Challenges

Management of U.S. Antarctic Program

The U.S. Antarctic Program (USAP) should deliver its services as effectively and efficiently as possible in order to facilitate the impressive scientific discoveries that are taking place in the Antarctic. NSF's Office of Polar Programs (OPP) oversees the USAP and manages all U.S. activities in the Antarctic serving the scientific community as a single program. It also supports most of the polar research funded by the National Science Foundation. OPP accomplishes most of its responsibilities by contracting with private companies and governmental organizations. With responsibilities similar in some respects to those of a local government, OPP provides all the infrastructure, instrumentation, and logistics necessary to enable the research efforts of more than 2,000 scientists from around the world.

The successful operation of the USAP requires unique management and administrative skills that are responsive to the special needs of Antarctic scientific research. OPP staff must not only know the science, but must also 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 support 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 national interests of the U.S. Government. For example, we are currently reviewing USAP's safety and health program, regarded as a high-risk activity because of the difficulties of delivering medical services in such a remote location. Another challenge for the program is the tracking and accounting for items associated with the USAP's large and distant infrastructure, which includes equipment, planes, ships and buildings. Capturing the correct information requires close coordination among OPP, its contractors, and NSF financial staff.

Merit Review and its Role in Fostering Diversity

The effectiveness and integrity of the merit review system may be NSF's most valuable asset. The agency considers this system "the keystone for award selection" and focuses many of its

management activities on issues related to merit review. We endorse those efforts and believe that maintaining and improving the quality and integrity of the merit review process will remain a significant challenge for NSF management for years to come.

During the past year the National Academy of Public Administration released a report on the agency's criteria for project selection, focusing in particular on the impact of Criterion 2, which is aimed at evaluating the potential societal impact of a project. While NAPA concluded that it is too soon to judge the impact of Criterion 2, it made several recommendations regarding its use. Specifically, NAPA stated that NSF needed to develop clearer objectives for the new criterion and adopt quantitative measures and performance indicators to track those objectives. Noting that the ultimate issues raised by implementation of Criterion 2 are not those of language but philosophy, NAPA suggested broader-based review panels with participants drawn from a wider range of institutions, disciplines, and underrepresented minorities.

NSF has initiated several changes to the merit review process in the past year to ensure that more attention is paid to Criterion 2, and we understand that further changes are being considered. NSF also states that it is adding new GPRA measures to track progress in encouraging participation in the merit review process by a broader range of institutions and underrepresented minority researchers. Because of its importance to the success of NSF's mission, the merit review system remains on the list of management challenges.

The Math and Science Partnership Program

NSF has been designated the lead agency on a key element of the President's initiative, *No Child Left Behind*, aimed at strengthening and reforming K-12 education. As the performance of American school children on math and science tests continues to disappoint, NSF is preparing to launch the Math and Science Partnership Program. The partnerships will provide $160 million this year for state and local school districts to join with colleges and universities to improve math and science education at the grade school level. A defining feature of the program will be the development of the partnerships between school districts, state and local governments, and institutions of higher learning.

Although we are confident that NSF is striving to achieve success with this initiative, implementation of the program will pose several challenges to NSF. On a practical level, it requires NSF to articulate expectations clearly at the outset and make many awards within a short time frame. Once the selections are made, NSF program officers will need to provide extensive coaching of projects in their formative stage to ensure that awardees do effective project planning. Because the success of the program will depend on a sustained collaboration between institutions that may not be used to working together, NSF staff will also need to assist project partners in building a shared sense of purpose and coordinating efforts.

Also, NSF's experience with projects such as the Urban Systems Initiative indicates that projects involving innovative partnering among awardees with limited experience in handling federal funds will require close monitoring of all aspects of their project, including financial and administrative matters. Therefore, the involvement of NSF on a continuing basis is essential. NSF staff will need to help coordinate the efforts of the various parties, monitor the progress of the projects, and ensure that federal funds are handled properly.

In closing, I am pleased to report that NSF continues to improve its operations as it responds to the above challenges. If you have any questions regarding these challenges, please contact me at your convenience.

MEMORANDUM

DATE: February 12, 2002

FROM: Dr. Rita R. Colwell
Director

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

TO: Dr. Christine C. Boesz
Inspector General

Thank you for your memorandum dated January 30,2002 on the National Science Foundation's performance and management challenges as authorized by the Reports Consolidation Act of 2000.

We are pleased with your continued recognition that the Foundation is one of the most cost-effective agencies in the federal government. This is reflected in the "green light" we received from OMB on the President's management scorecard for our financial management system. In addition, external panels have found our programs to be "of high quality and efficiently managed." We can all take pride in these accomplishments.

Nonetheless, we recognize that there is more we can do. We are challenged in an ever-increasing complex world situation to insure that we maintain our high standards and focus on our efficiency and effectiveness. Over its 50-plus year history, NSF's commitment to excellence in supporting research and education has consistently been matched by its high standards and commitment to innovation in administration and management. Continuing this tradition of excellent stewardship requires new approaches and new investments that reflect NSF's increasing responsibilities, the growing complexity of its workload, and new requirements for both IT and physical security, as discussed in NSF's FY 2003 Budget Request.

The five broad areas of management and performance challenges that you have identified are consistent, in many respects, with those identified by NSF's senior management as areas that require our constant attention to assure improvement of our long-term operating performance. Furthermore, four of these areas are directly connected to the President's Management Agenda: Strategic Management of Human Capital; Improved Financial Performance; Expanded Electronic Government; Budget Performance and Integration. The NSF Program –Specific Challenges are likewise consistent with areas that we recognize as requiring increased attention.

We began to address many of these challenges last year and continue to do so. For example, we are addressing workforce planning and training in the five-year Administration and Management plan being prepared for the Office of Management and Budget (OMB). We are refining our award management process to include a more structured, risk-based monitoring element. Increasing management efficiency is a highlight of our FY2003 budget request for Administration and Management (A&M). We remain committed to a reliable and secure information technology infrastructure and will continue to expand and refine our systems to provide even better safeguards.

We continue to develop solid strategic implementation plans to address the challenges before us and, as you point out, the plan to address these challenges must include the need and fulfillment of additional agency resources to keep pace with our increasing workload.

I am pleased that you recognize the great strides that NSF has taken over the past year to improve our operations in response to these challenges. Your office's support and analysis were vital to our successfully making the case to OMB for increased staffing and resources for A&M in the FY 2003 Request. In this spirit, we look forward to continuing to work together to improve the efficiency and effectiveness of the operations of the Foundation.

Rita Colwell