

National
Science
Foundation



Office of
Inspector
General



Semiannual Report to Congress

September 2007

About The National Science Foundation...

The National Science Foundation (NSF) is charged with supporting and strengthening all research disciplines, and providing leadership across the broad and expanding frontiers of science and engineering knowledge. It is governed by the National Science Board which sets agency policies and provides oversight of its activities.

NSF invests approximately \$5 billion per year in a portfolio of approximately 35,000 research and education projects in science and engineering, and is responsible for the establishment of an information base for science and engineering appropriate for development of national and international policy. Over time other responsibilities have been added including fostering and supporting the development and use of computers and other scientific methods and technologies; providing Antarctic research, facilities and logistic support; and addressing issues of equal opportunity in science and engineering.

And The Office of the Inspector General...

NSF's Office of the Inspector General promotes economy, efficiency, and effectiveness in administering the Foundation's programs; detects and prevents fraud, waste, and abuse within the NSF or by individuals that receive NSF funding; and identifies and helps to resolve cases of misconduct in science. The OIG was established in 1989, in compliance with the Inspector General Act of 1978, as amended. Because the Inspector General reports directly to the National Science Board and Congress, the Office is organizationally independent from the agency.

About the Cover...

Front and Back Cover Photos by Kenneth L. Busch.

Table of Contents

- Report Highlights 5**
- Legal Review 7
- Outreach 8
- Audits & Reviews 13**
- Significant Audits and Reviews 13
- Contract Audits 15
- Grant Audit 16
- Required Annual Single Audits 17
- Audit Resolution 21
- Work in Progress 24
- Investigations 25**
- Civil and Criminal Investigations 25
- Administrative Investigations 29
- Other Matters 37
- Statistical Data 39**
- Audits 39
- Investigations 48
- Appendix 51**
- Management Challenges Letter 51
- Reporting Requirements 61
- Acronyms 62

[Blank Page]



From the Inspector General

This Semiannual Report to Congress summarizes the accomplishments of the National Science Foundation (NSF) Office of Inspector General (OIG) for the six months ending September 30, 2007. I am pleased to report that our office had a very productive period: we obtained two criminal convictions, secured \$806,399 in investigative recoveries, and disposed of 61 civil, criminal, and administrative cases. Our investigations into research misconduct resulted in 10 referrals to NSF for action, while past investigations yielded 4 misconduct findings and 7 debarments by the agency. In addition we issued 9 audit reports with \$197,371 in questioned costs. We thank NSF for its assistance and cooperation in these accomplishments.

This semiannual period has been notable for more than just positive statistics. We are pleased that Congress this summer amended the Program Fraud Civil Remedies Act to bring NSF within its coverage. This authority, which we have long advocated, allows the agency to pursue administratively all losses of up to \$150,000 associated with fraud. In addition, I would like to recognize Ginna Ingram, a staff attorney, whose excellent article on compliance programs was published in the most recent Journal of Public Inquiry. Compliance plans have proven to be effective in raising the awareness of oversight boards and senior managers regarding their responsibilities in this area, as well as increasing accountability for their actions. Finally, on p. 17 we report on the status of our ongoing series of audits of labor effort charges. We are gratified that Nature Magazine in its October issue thought the audit findings significant enough to devote both a feature article and an editorial to discuss their implications. The next audit report in this series will be issued early in 2008.

Our annual assessment of the most serious management challenges facing NSF appears in the appendix of this report. While NSF has made significant progress in addressing several longstanding challenges, such as award administration and workforce planning, two new challenges have emerged over the past year: the audit resolution process, and the management of United States Antarctic Program plant, property, and equipment. As the National Science Board reviews whether cost sharing should be brought back, this semiannual report contains two discussions of the problems NSF has encountered in administering cost sharing: one in the management challenges letter on p. , and one in the investigations section on p.

Finally, as I write this letter, the House of Representatives has passed H.R. 928 amending the IG Act of 1978, and the Senate is actively working on 5.2324 aimed at strengthening the independence of the Inspectors General. While legislation that would enhance the independence and accountability of the federal IGs is welcome, the language in the final bill regarding sensitive issues such as an IG's compensation must be carefully crafted to take into account the diverse set of circumstances our IGs work under. In the case of the National Science Foundation, I am concerned that an unintended consequence may be that future candidates for my position with strong credentials will be reluctant to accept a position with total compensation that is not competitive with that of comparable federal positions.

A handwritten signature in black ink, reading "Christine C. Boesz".

Christine C. Boesz, Dr.P.H.
Inspector General
October 19, 2007

[Blank Page]

Report Highlights

- A management consulting firm retained by OIG determined that as of September 30, 2004 the unfunded liability for post-retirement benefits at NSF's five Federally Funded Research and Development Centers (FFRDC) surpassed \$80 million, and that this liability was expected to increase by another \$6.8 million in the following fiscal year. The firm also found that the value of medical benefits varied significantly among the five FFRDCs, with two having a higher value than benefits provided by comparable groups, and two with much lower values. All of the FFRDCs were found to have very similar pension programs, which exceeded the value of those provided by most comparative groups. The study made several recommendations including periodically comparing the benefit plans of the FFRDCs to those of comparable organizations as a check on their reasonableness, and provided specific ideas for helping to control benefit costs. **(See p. 14)**
- An audit of three awards for \$9.4 million to the University of Maryland Baltimore County (UMBC) found serious internal control deficiencies, including inconsistent adherence with UMBC's established financial management practices. These deficiencies resulted in \$174,655 of erroneous costs claimed to NSF grants and if not corrected, could have a significant impact on UMBC's ability to administer future award funds. Auditors found as a material weakness that UMBC staff did not always follow the University's cost accounting procedures to ensure that costs charged to NSF awards were accurate, allowable, and allocable. The university also lacked procedures to detect errors in the amount of indirect costs claimed, and failed to adequately monitor subawardees. UMBC concurred with all the report findings and indicated that it was taking corrective action. **(See p. 16)**
- The Inspector General community issued its *Report on National Single Audit Sampling Project* on the quality of annual audits performed by state auditors or independent public accountants and required by the Single Audit Act of 1984. The IGs' report established that improvements in performance of these single audits are needed government-wide. Quality control reviews of a random sample of 208 audits found that 115 were of acceptable quality, but that 30 or 16 percent had significant deficiencies and were therefore of limited reliability, and 63 or 35.5 percent were unacceptable and could not be relied upon. The most prevalent deficiencies were insufficient documentation of the understanding of internal controls over compliance and inadequate compliance testing of OMB A-133 compliance requirements. **(See p. 17)**

- A former professor at a Tennessee university pled guilty to a federal felony charge of making a false statement under an NSF grant. The professor admitted to sending university employees to conduct an evaluation project in support of the professor's private consulting business. The evaluation project was separate from the professor's work under the NSF grant at the university, and she was paid consulting fees separate from her university salary. The professor also admitted that the false statements and other conduct caused a loss of between \$10,000 and \$30,000 and that she abused a position of trust as Principal Investigator on the NSF grant and center director at the university. On July 30, 2007, the professor was sentenced to six months home confinement, 2 years probation, and ordered to pay restitution of \$25,598. **(See p. 25)**
- A former employee of an NSF-funded research center pled guilty to one count of mail fraud, in response to an indictment charging the subject with seven counts of mail fraud. On June 25, 2007, the subject was sentenced in U.S. District Court to 16 months in prison, 3 years of supervised release, payment of restitution of \$18,214.15, and payment of a special assessment of \$100. We referred the outcome of this investigation to NSF with a recommendation that the subject be debarred for a period of 5 years because she abused her position of trust and could readily obtain the same type of employment elsewhere, as well as the fact that her actions were intended solely for her personal financial gain. NSF's decision is pending. **(See p. 25)**
- A proposal by a professor at an Oregon university contained extensive sections of text and multiple figures duplicated from an earlier proposal that NSF had asked the professor to review according to an OIG inquiry and a university investigation. The investigation concluded that his actions were intentional, violated academic standards of scholarship, and that his plagiarism was therefore an act of research misconduct. The university prohibited the subject from submitting external proposals for 3 years, required 2 years of subsequent official prior review of any external proposals submitted, and placed a letter of reprimand in the professor's personnel file. Based on our recommendations, NSF made a finding of research misconduct, and applied several sanctions including proposing that the professor be debarred from receiving federal funds for a period of 3 years. **(See p. 29)**
- In an egregious example of student misconduct, a graduate student at a Washington university admitted he falsified and fabricated NSF-funded research data in four manuscripts, three of which were published. Our office received the allegation following the university's inquiry. During the investigation, the student admitted he falsified and fabricated the data because of "a combination of lack of motivation, laziness and a lack of interest in the work (especially experiments)." The university made a finding of research misconduct, dismissed the student from the university, and revoked his master's degree. We recommended that NSF: make a finding of research misconduct; send the subject a letter of reprimand; debar him for 3 years, require both certifications and assurances for 3 years following debarment, and bar the subject from serving as an NSF reviewer for 3 years. **(See p. 31)**

OIG Management Activities

Legal Review

Program Fraud Civil Remedies Act of 1986

Over the past several years, OIG Semiannual Reports have noted our long-standing support for an amendment to the PFCRA to bring the National Science Foundation (NSF) within the statute's coverage. The 2007 NSF Reauthorization Act, which passed in August, included this amendment. PFCRA authority provides the agency an administrative mechanism to recover losses resulting from fraud cases under \$150,000 when DOJ declines to prosecute. We believe that PFCRA, when implemented by NSF, offers a valuable and important opportunity to protect appropriated dollars and to ensure such funds serve their intended purposes. OIG looks forward to working with the Foundation to expedite implementation of the Act.

H.R. 928 -- Improving Government Accountability Act

OIG has concerns regarding certain provisions of H.R. 928, which passed the House on October 3, 2007, and which would amend the Inspector General Act of 1978 in several major respects. Specifically, OIG is concerned that amendments designed to strengthen independence may, in fact, erode it (e.g., seven-year term because of the possibility of reappointment). In a recent letter to members of Congress, the National Science Board also expressed concern over provisions in the bill.

As the Board noted, provisions that alter compensation would undermine its ability to recruit and retain the best qualified individuals to serve in the IG position. More precisely, the lack of bonus and award eligibility would create an incentive for incumbents and candidates alike to seek other positions that offer more competitive pay packages. Similar concerns extend to the seven-year term limits that the bill seeks to impose. Unlike their presidentially-appointed counterparts, most IGs who are appointed by agency heads are career federal employees who have served in positions with civil service status. The imposition of term limits could very well deter candidates from exchanging a permanent position for the temporary status of a term appointment.

HIGHLIGHTS

Legal Review	7
Outreach	8

Outreach

During this semiannual period, NSF OIG continued to conduct outreach to other federal agencies and their OIGs, the national and international research communities, and to NSF. Our outreach activities are intended to inform and educate the research community about all aspects of our mission of prevention and detection of fraud, waste, and abuse, and to enhance the efforts of federal and international oversight officials in addressing these issues.

Many of our presentations emphasize the value of compliance programs, particularly when we attend outreach events that include administrators, principal investigators, university officials, and international funding agencies. We explain the value of such programs and the significant risks that universities and other members of the research community assume in their absence. Effective compliance programs reduce the risk of fraud and abuse, achieve technical compliance with federal requirements, enhance the research enterprise, and contribute to the successful commitment of federal funds for their intended purposes. During this semiannual period, OIG staff members wrote an article for an IG community publication demonstrating the positive impact compliance programs can have on research institutions and organizations.

Working with the Federal Community

NSF IG Appointed Vice-Chair of ECIE. In May, Dr. Christine C. Boesz was appointed Vice-Chair of the Executive Council for Integrity and Efficiency (ECIE) by the Deputy Director of the Office of Management and Budget. The ECIE is comprised of 34 Inspectors General who are appointed by the heads of their respective agencies. It was established by executive order in 1992 to address integrity, economy, and effectiveness issues that transcend individual government agencies; and increase the professionalism and effectiveness of IG personnel throughout the federal government. To accomplish their mission, the ECIE members conduct interagency and inter-entity audit, inspection, and investigation projects to promote efficiency in federal programs and operations and better address government-wide issues of fraud, waste, and abuse. The Council members also develop policies, standards, and approaches to aid in the establishment of a well-trained and highly skilled IG workforce.

Investigators, Auditors Engage Federal Colleagues. NSF OIG staff worked with individuals from a number of other federal agencies and OIGs on a wide range of professional matters. These included activities in conjunction with the Inspector General Academy, the Federal Law Enforcement Training Center, the Federal Bureau of Investigation, the U.S. Forest Service, the Office of Management and Budget, the Office of Science and Technology Policy, and the Department of Justice. We also interacted with OIGs from the Department of Defense, Department of Treasury, the Denali Commission, and NASA. These contacts were pursued directly with other offices, community-wide through the Council of Counsels to Inspectors General, and in multi-agency efforts coordinated by one of the committees of the PCIE/ECIE.

During this semiannual period, NSF OIG investigators continued to actively participate in the Grant Fraud Subcommittee of the Department of Justice National Procurement Fraud Task Force. We actively supported the initiative to increase outreach efforts to the grant community and to enhance federal certification standards. We worked with the Federal Law Enforcement Training Center in developing a grant fraud investigation training program in support of the Grant Fraud Subcommittee. Investigators also contributed to the Regional Procurement Fraud Working Group, hosted by the U.S. Attorney's Office for the Eastern District of Virginia. NSF OIG staff also participated in the Task Force's Legislation Committee.

OIG auditors provided extensive comments to OMB on best practices for coordinating federal financial statement audits and participated in the IG community's Federal Audit Executive Council (FAEC), which helps coordinate audit policy and operations government-wide. Auditors met monthly with the Financial Statement Audit Network, a working group of a FAEC standing committee, and worked with other OIGs on human resource issues. Our auditors also assisted in updating the GAO/PCIE *Financial Audit Manual*, which helps ensure consistent, efficient, and high quality financial statement audits of federal agencies.

The Inspector General, who is Chair of the PCIE/ECIE Misconduct in Research Working Group, continued to coordinate efforts within the IG community to identify, investigate, and prevent research misconduct. NSF OIG staff were also active in the PCIE Inspections and Evaluation Committee, the PCIE/ECIE Computer Forensics Working Group, and the PCIE GPRA Round-table.

Working with the Research Community

International Meetings Promote Dialogue. Dr. Boesz co-hosted an International Workshop on Accountability Challenges with the European Science Foundation, which took place in June in Strasbourg, France. The agenda focused on evaluating and managing risks, general auditing and internal control issues, and investigating misconduct in research allegations. The IG and the Associate IG for Audit made a total of three presentations on audit committee responsibilities, the single audit concept, and effective compliance programs. Fourteen countries were represented at the workshop.

In addition, the Inspector General and Associate IG for Investigations (AIGI) attended a World Conference on Research Integrity in Lisbon, Portugal, in September. The IG made a keynote presentation to the conference on Legal Aspects of Investigations and International Cooperation and the AIGI made a presentation on investigating research misconduct across international borders. The purpose of the conference was to further world dialogue on the topic of research misconduct, understand the varied regulations and practices among the participating countries, recognize



The IG and AIG for Audits pose with other participants at the International Workshop on Accountability Challenges.

common problems, and identify best practices for addressing them. There is not yet a standard definition world-wide for research misconduct, conflict of interest, or plagiarism, and the conference represented an initial effort to begin the dialogue and establish a framework for future discussions. The event was closely linked to the OECD Global Science Forum and attracted many of the same participants.

OIG Staff Participate in Conferences. To maximize our limited resources, we try to select the best opportunities to communicate our message to the research community from among the many workshops, conferences, and other events sponsored by institutions and associations of research professionals. During this semiannual period, our audiences included the Society of Research Administrators International, the National Council of University Research Administrators, and the National Grants Management Association. We also presented at several NSF-sponsored events, including the Small Business Innovation Research grant recipients, Education and Human Resources' Joint Annual Meeting, the Regional Grant Recipients Seminars, and Experimental Program to Stimulate Competitive Research (EPSCoR) Project Administrators Annual Meeting.

These events afforded us the opportunity to educate the research community, to obtain its input on matters of concern to OIG, and to collaborate with other organizations in identifying and communicating best practices in the operation of the research enterprise. Our goal is to assist individuals and organizations in their efforts to create systems and tools to identify, resolve, and prevent misconduct or mismanagement, and thereby promote an environment of ethical conduct in scientific research and grant administration.

Presentations at Universities. NSF OIG staff members are frequently invited to provide training to, and answer questions from, university officers and other individuals. During this semiannual period, we addressed audiences at ten universities involved in applying for or administering NSF awards, performing supported research, or conducting university-level inquiries into allegations of research misconduct. When we presented to faculty and administration officials involved in the performance of research misconduct inquiries and investigations, we also shared best practices on the enhancement of compliance and ethics programs that can help reduce research misconduct.

Working with NSF

Our many briefings, meetings, and presentations within NSF reflect our commitment to maximizing the frequency and effectiveness of communications between OIG personnel and agency personnel. During this semiannual period, OIG staff and their contractors briefed National Science Board members at each Audit and Oversight Committee meeting on significant audit and investigative matters, such as the annual audit of NSF's financial statements. Staff also participated as resource personnel in the NSF Program Managers Seminars, which provide new NSF staff with detailed information about the Foundation and its activities. In addition, we regularly participate in an internal media communication effort within NSF, whereby we explain the OIG mission and responsibilities and the channels through which employees can bring matters to our attention.

Much of our success in establishing and maintaining effective communication and professional relationships with the individual directorates and offices within NSF is due to the strength of our liaison program. Our liaison teams (generally one investigator and one auditor) served as valuable conduits of information between our offices in the course of approximately 20 liaison events.

Audits & Reviews

In this semiannual period we completed a required evaluation of NSF's information technology (IT) security program, two informational studies that we provided to NSF management, and audits of two NSF contractors and of several grants to a university. In addition, we completed a quality control review of a required annual audit of an NSF awardee and found deficiencies similar to those reported in a recently issued national sampling project on the quality of these annual audits. We also reviewed 151 annual audits of NSF awardees that reported a total of 203 findings. Finally, in the last six months we worked with NSF to resolve findings and recommendations in six audits completed in prior periods. We are continuing to work on several audits, including reviews of 1) the terms and conditions of NSF's cooperative agreements, 2) the agency's handling of personally identifiable information and 3) labor effort audits at select universities.

Significant Audits and Reviews

FY 2007 FISMA Evaluation Affirms NSF IT Security Program But Recommends Improvements

According to our FY 2007 Federal Information Security Management Act (FISMA) evaluation, NSF has an established information security program and has been proactive in reviewing security controls and identifying areas that should be strengthened. NSF also corrected four of the six findings in the prior year's FISMA Report. However, the auditors reported four new findings relating to system access controls, an off-site applications system, the return of NSF equipment by out-going contractors, and specific rules of behavior for one of NSF's systems. These findings do not individually or collectively rise to the level of "significant deficiency", but should be addressed promptly. NSF management concurred with the report and will provide a corrective action plan for the recommendations. FISMA requires agencies to adopt a risk-based approach to improving computer security that includes annual security program reviews and an independent evaluation by the Inspector General. Under a contract with the OIG, Clifton Gunderson LLP conducted this independent evaluation for FY 2007 and will review implementation of corrective actions as part of the FY 2008 independent evaluation.

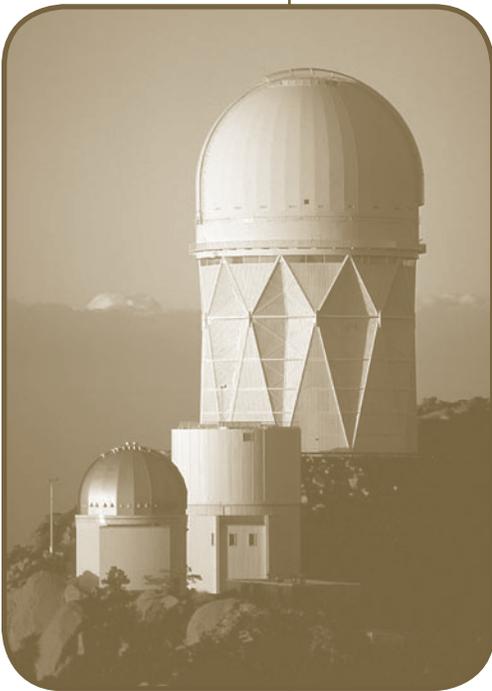
HIGHLIGHTS

Significant Audits & Reviews	13
Contract Audits	15
Grant Audit	16
Required Annual Single Audits	17
Audit Resolution	21
Work in Progress	24

NSF's Administrative and Overhead Costs May Be Understated

In response to a Congressional request, OIG reviewed the portion of NSF's FY 2005 budget devoted to administrative and overhead costs. Our review identified \$322,137,984 of NSF's FY 2005 administrative and overhead costs, which represented 5.8 percent of NSF's budget for that fiscal year. While this percentage is consistent with NSF's estimates that historically, 5 to 6 percent of its budget is spent on administrative and overhead expenses, the amount was 10.2 percent more than the \$292,426,388 NSF reported in its FY 2005 financial statements.

The variance was primarily due to differences in interpretation of what constitutes an administrative and overhead cost. Our approach was to include all costs associated with NSF's award making and management processes, such as \$23,001,112 to conduct panel and mail reviews of research proposals, \$6,439,300 in estimated donated merit reviewer time, as well as \$405,309 for information systems and personnel support contracts. In response, NSF stated that its current approach of classifying award making and management costs as direct costs to NSF programs is consistent with applicable federal guidance and that it does not plan to change its interpretation.



Sunrise over Kitt Peak National Observatory, part of the National Optical Astronomy Observatory (NOAO), an FFRDC supported by NSF.

Evaluation of Medical and Pension Benefits at NSF's FFRDCs Finds Unfunded Liability of Over \$80 Million

The OIG engaged Aon Consulting, an expert in the field of global human capital and management consulting, to determine the unfunded current and future medical and pension liability for each of the five Federally Funded R&D Centers (FFRDC) that NSF supports. It was also asked to review the reasonableness of medical and pension benefits for active and retired personnel. The study found that as of September 30, 2004 the unfunded liability for post-retirement benefits at NSF's FFRDCs was over \$80 million, and this liability was expected to increase by another \$6.8 million in the following fiscal year. In 2006, NSF provided approximately \$240 million to fund the operations of its five FFRDCs. This included about \$21 million or 9 percent for medical and pension benefits.

In addition, the value of medical benefits varied significantly among the five FFRDCs, with two having a higher value than benefits provided by comparable groups, and two with much lower values. All of the FFRDCs were found to have very similar pension programs, which exceeded the value of those provided by most comparative groups.

The study made several recommendations. It suggested that NSF establish a formalized process for periodically reviewing and comparing the benefit plans of its FFRDCs to those of comparable organizations as a check on their reasonableness. It also suggested that NSF establish reasonable baseline parameters on expected medical and pension costs at the FFRDCs based on the best

practices of similar organizations. In addition, the study provided specific ideas for economizing that have been used successfully by other employers to help control benefit costs. NSF could suggest these ideas to the managers of the FFRDCs to make their employee benefits plans more commensurate with those of comparable organizations.

Overall, NSF found the study helpful as baseline information, but that it would have been more valuable if it considered salaries and other benefits that comprise total compensation. Although NSF believes it cannot direct the FFRDCs to limit medical and pension benefits, the study may be useful in assessing the reasonableness of the amount that the FFRDC proposes to NSF for reimbursement of employee benefits in accordance with provisions of the awards, federal guidelines, and other legal and accounting requirements.

Contract Audits

Increase in Fee to be Paid to Arctic Contractor Should be Reversed

During the last six months, OIG completed two audits of VECO USA Inc. which provides logistics support to NSF's research activities in the Arctic and recommended that a \$45,240 fee increase be reversed and those funds put to better use.⁴

We contracted with the Defense Contract Audit Agency (DCAA) to conduct the first audit of a revised Disclosure Statement and associated Cost Impact Proposal that VECO submitted in May 2006. The revised documents pertained to VECO's proposed change in its method of accounting used to calculate its indirect cost rates for government contracts. The DCAA auditors found that the change complied with applicable Cost Accounting Standards and the Federal Acquisition Regulations (FAR) and that VECO's revised Disclosure Statement was consistent with its actual practice. As such, the auditors did not object to the associated \$1.5 million (or 3.3 percent) increase in total cost to the NSF contract that resulted from the accounting change.

Because the DCAA auditors did not express an opinion on \$45,240 of increased profit that VECO proposed to charge NSF as a result of its accounting change, OIG reviewed the reasonableness of these charges and found that the proposed fee increase was not allowable under the FAR, which prohibits a cost-plus-a-percentage-of-cost system of contracting. Since it is not permissible to pay a contractor greater profit if it incurs additional costs as a result of an accounting change, we recommended that NSF negotiate with VECO to reverse the increased fee of \$45,240. The NSF Contracting Officer agreed and indicated her intention to disallow the increase in fee. Although this VECO contract has

¹ In our September 2006 Semiannual Report, p. 20, we reported on an incurred cost audit for FYs 2001-2003 of a \$46 million cost-plus-fixed-fee VECO contract, which expired in May 2005. In that audit auditors qualified their opinion on \$2.6 million of direct labor costs charged to NSF because the contractor's time cards were not routinely signed by employees and supervisors to certify their accuracy. In addition, the auditors questioned \$17,200 of unallowable employee bonus payments. During audit resolution NSF sustained all \$17,200 of questioned costs and ensured that VECO implemented adequate timekeeping policies. NSF, in coordination with the Defense Contract Audit Agency, is currently reviewing VECO's revised bonus policy.

expired, our audits of this company have future implications, because NSF has a follow-on VECO contract with a potential value of \$107 million through May 2012.

NSF Contractor Overcharges \$22,716

Auditors found that Abt Associates included \$2.2 million of unallowable indirect costs in calculating its indirect rates charged to its federal contracts, which resulted in Abt overcharging NSF \$22,716. The OIG contracted with DCAA to perform an audit of costs Abt claimed on four NSF contracts, amounting to \$1.64 million, to provide technical and evaluation support for NSF's Engineering and Education Directorates.

Of the \$2.2 million of unallowable indirect costs, \$1.07 million, or 49 percent, was for employee stock options that appeared to distribute profits, which are unallowable under federal regulations. Another \$485,027, or 22 percent, was for a change in Abt's method of accounting for indirect costs. Abt had violated Cost Accounting Standards (CAS) because it had not informed the government or received its approval for the accounting change. Finally, the auditors found that \$336,427 in fringe benefits, or 15 percent, of the \$2.2 million, was for unallowable labor costs.

The auditors recommended that NSF require Abt to submit revised claimed cost billings that reflect the corrected indirect cost rates. Further they recommended that NSF coordinate with Abt's cognizant federal agency, US AID, to determine the effect of Abt's CAS noncompliance on any unallowable costs charged to NSF contracts. We have forwarded the audit report to NSF's Division of Acquisition and Cooperative Support to resolve any questioned costs and ensure corrective actions.

Grant Audit

Significant Control Weaknesses Identified at University Campus

An audit of three awards amounting to \$9.4 million to the University of Maryland Baltimore County (UMBC) found serious internal control deficiencies, including inconsistent adherence with UMBC's established financial management practices. These internal control deficiencies resulted in \$174,655 of erroneous costs claimed to NSF grants and if left uncorrected, could have a significant impact on UMBC's ability to administer future awards funds.

Auditors found as a material weakness that UMBC staff did not always follow the University's cost accounting procedures to ensure that costs charged to NSF awards were accurate, allowable, and allocable. UMBC's cost accounting procedures required the creation of separate accounts for each NSF award, monthly analysis of award costs to ensure that expenditures claimed to a particular NSF award were allowable and reasonable, and an electronic time and effort certification process to capture labor effort spent on NSF awards. However, because the procedures were not always followed, \$358,203 of erroneous labor, fringe benefit, and participant support costs were charged to

NSF awards. Based on our audit, UMBC corrected all of the erroneous charges on its March 31, 2006 financial management report to NSF, except for \$41,511, which the auditors subsequently questioned.

In addition, UMBC did not have adequate procedures to detect errors in the amount of indirect costs claimed to NSF. It relied on its accounting system to calculate the amount of indirect costs on NSF awards, and as a result, overstated its indirect costs by \$131,510.

Also, contrary to its established procedures, UMBC did not always monitor the subaward costs and cost sharing it charged to its NSF awards. UMBC did not enforce its requirement to obtain supporting documentation from its subawardees as a basis to claim costs to NSF. As a result of these internal control weaknesses, UMBC could not be certain that the subawardee amounts it claimed to NSF were valid or correct. Only by auditing the subawardees directly were the auditors ultimately able to affirm that approximately \$5.3 million of subawardee direct and indirect costs and claimed cost sharing were allowable, allocable, and sufficiently supported. UMBC will not be able to ensure the propriety of future subaward costs claimed to NSF until these weaknesses are corrected.

The auditors recommended that UMBC develop and implement a subawardee fiscal monitoring plan, policies and procedures to obtain and review cost sharing data and related supporting documentation from its subawardees, written policies and procedures to perform periodic compliance reviews with established cost control processes, and procedures to review indirect costs charged to NSF awards for allowability and allocability. UMBC concurred with all the report findings and indicated that it was taking corrective action.

Required Annual Single Audits

National Single Audit Sampling Project Indicates Improvements Are Needed

In June 2007 the Inspector General community issued its *Report on National Single Audit Sampling Project* on the quality of annual audits performed by state auditors or independent public accountants and required by the Single Audit Act of 1984. The IGs launched a government-wide initiative in November 2004 to assess the quality of these annual audits, which are also referred to as A-133 audits because OMB Circular A-133 provides guidance for them.⁵ The National Single Audit Sampling Project randomly selected 208 A-133 audits for review covering \$57 billion of government funds from a universe of over 38,000 audits. NSF OIG's AIG for Audits, Deborah Cureton, served on the Project Advisory Board, while Kathy Leone, Audit Manager, served as part of project management.

⁵ Non-federal entities that expend \$500,000 or more in a year in Federal awards are required, under the Single Audit Act of 1984, as amended, to have a Single Audit conducted for that year. Office of Management and Budget (OMB) Circular A-133, *Audits of States, Local Governments and Non-Profit Organizations*, provides the requirements under which these audits are conducted.

The IGs' report established that improvements in performance of these single audits are needed. Quality control reviews of the 208 audits found that 115 were of acceptable quality, but that 30 or 16 percent⁶ had significant deficiencies and were therefore of limited reliability, and 63 or 35.5 percent⁷ were unacceptable and could not be relied upon. The most prevalent deficiencies were insufficient documentation of the understanding of internal controls over compliance and inadequate compliance testing of OMB A-133 compliance requirements.

The project report directed its recommendations to enhance and clarify Single Audit guidance and requirements, require auditor training on Single Audits as a prerequisite for conducting such audits, and address sanctions for substandard Single Audits to OMB, various federal agencies, and the American Institute of Certified Public Accountants. Implementation of the recommendations in this report is expected to have a significant impact on future performance of these audits and enhance the enforcement process when they are substandard.

Single Audit of NSF Awardee Found to Be Insufficient

During this semiannual period we completed a quality control review of an annual audit performed at Barrow Arctic Science Consortium (Consortium) by a public accounting firm and found deficiencies and causes for the deficiencies similar to those found in the national sampling project report (see sidebar). Our review found that the auditor did not adequately perform the required tests of controls over federal grant compliance requirements. The auditor's workpapers contained assessments of certain controls they deemed to be low risk but did not contain any evidence of testing to support the low risk level assessments. In addition, the auditor did not report on instances of noncompliance that were identified during the audit, such as the lack of: 1) appropriate records of equipment purchased with federal funds, 2) a bi-annual inventory of such equipment, and 3) a formal vendor approval process.

As a result, we were unable to determine whether the auditor identified all instances of material non-compliance with federal grant compliance requirements. While the auditor did qualify its opinion on compliance, it is possible that additional audit work may have resulted in additional findings and a more serious adverse or disclaimer of opinion on the Consortium's compliance controls. We recommended that the auditor obtain additional training on the planning and performance of A-133 audits; improve its processes for planning and performing A-133 audits; and conduct additional testing at the Consortium to ensure that certain capital assets were procured in accordance with OMB requirements and equipment purchased with federal funds were properly inventoried and safeguarded.

The auditor responded that it had complied with federal audit requirements but agreed with the findings and recommendations. In addition, the auditor stated that it has already begun implementing corrective actions to improve the quality of OMB Circular A-133 audits and is in the process of conducting additional testing on equipment and procurement. We plan to follow up on the status of corrective actions taken within six months.

⁶ The 16 % is based on point estimates. See *Report on National Single Audit Sampling Project*, p. 10.

⁷ The 35.5 % is based on point estimates. See *Report on National Single Audit Sampling Project*, p. 10.

203 Findings Reported in A-133 Audit Reports

In the last six months we reviewed 151 audit reports, covering NSF expenditures of more than \$8 billion from fiscal year 2002 through 2006 to determine questioned costs related to NSF awards and whether the reports comply with the requirements of OMB Circular A-133. Among the findings were compliance deficiencies and internal control weaknesses resulting in \$380,690 of questioned costs. The findings in A-133 reports help to identify potential risks to NSF awards and are useful to both NSF and the OIG in planning site visits, post-award monitoring, or future audits. Because of the importance of A-133 reports in monitoring awardees, the OIG returns reports that are judged inadequate to the awardees to work with the audit firms to take corrective action.

Findings Related to NSF Awards

Category of Finding	Type of Finding			
	Compliance	Internal Controls	Monetary	Total
Financial and Award Management	53	24	3	80
Salary/Wages	24	7	9	40
Subawards	15	5	1	21
Procurement System	13	6	2	21
Equipment	14	3	1	18
Cost-Sharing	4	1	2	7
Indirect Costs	2		2	4
Property Management System	3			3
Other Direct Costs	2		1	3
Travel		2		2
Materials and Supplies	1			1
Program Income	1			1
Participant Support Costs			1	1
Consultant Services			1	1
TOTAL	132	48	23	203

In the 151 reports we reviewed, the auditors issued 5 qualified or adverse opinions on the financial statements and 22 qualified or adverse opinions on the entity's compliance with federal award requirements. These modified opinions reflect serious internal control and compliance issues. The reports revealed 132 instances where awardees failed to comply with federal requirements and 48 instances where weaknesses in awardees' internal controls could lead to future violations. The auditors also identified 23 instances of non-compliance

with federal requirements that caused them to question a total of \$380,690 costs claimed by recipients of NSF awards. As detailed in the above table, the most common violations were related to financial and award management and salary/wages.

We also examined management letters accompanying the A-133 audit reports. Auditors use these letters to identify internal control deficiencies that are not significant enough to include in the audit report, but which could become more serious over time if not addressed. Auditors issued management letters to 111 entities in this reporting period. The letters we examined disclosed deficiencies that could affect NSF awards in areas such as (1) tracking, managing, and accounting for NSF costs, and (2) policies and procedures related to financial and award management.

Findings Related to Timeliness and Quality of Audit Reports

Of the 151 audit reports we reviewed in which NSF was the cognizant or oversight agency, we found that 38, or 26 percent of the total, had been submitted late or the audit reporting package was incomplete. OMB Circular A-133 requires audits to be completed and reports submitted by the awardee to the Federal Audit Clearinghouse within the earlier of 30 days after the awardee's receipt of the auditors' report(s), or nine months after the end of the audit period, unless a longer period is agreed to in advance by the cognizant or oversight agency for audit. In each case, we informed the auditee that the late submission of a complete reporting package could affect the organization's risk profile and suggested that all future A-133 audits be performed and submitted in a timely matter.



OIG staff consider the leadership skills and sacrifice of those who fought at Gettysburg at a recent retreat.

The A-133 reports we reviewed also revealed problems with audit quality. For example, 16 reports (42 percent) either did not include a Corrective Action Plan or the plan was incomplete. OMB Circular A-133 states that, at the completion of the audit, the auditee shall prepare a corrective action plan to address each audit finding included in the current year auditor's reports. In addition, auditors are required to follow the Circular's guidelines regarding the presentation of the audit findings. However, we found that 14 reports (37 percent) did not present the findings in sufficient detail. Generally, the auditors did not adequately identify (1) the federal award to which the findings applied, (2) the criteria or regulatory requirement upon which the findings were based, and/or (3) the cause and effect of the findings. Finally, we found that 15 reports (39 percent) did not present the Schedule of Expenditures of Federal Awards (SEFA) in accordance with A-133 requirements. In most instances, the SEFA did not provide sufficient information to allow for identification of awards received from non-federal "pass-through" entities.

The OIG identified each of the potential errors and contacted the auditors and awardees, as appropriate, for explanations. In each case, the auditors and awardees either provided adequate explanations or additional information to demonstrate compliance with the Circular, or the error did not affect the results of the audit. While some of the errors were clearly immaterial, the auditors and awardees generally acknowledged that the errors reduced the reliability of the reports. We issued a letter to each awardee to inform them of the results of our review and the specific issues on which to work with the auditors during future audits to improve the quality and reliability of the report.

Audit Resolution

DOD Withdraws Prior Finding of Non-compliance Affecting Millions in Payments to Polar Support Contractor

Beginning with our September 2004 Semiannual Report,⁸ we have reported on a number of audits of Raytheon Polar Services Corporation's (RPSC) financial records and its compliance with its Cost Accounting Standards (CAS) disclosure statement. Among the findings contained in these audits, the auditors questioned about \$56 million of claimed costs for the five-year period 2000 through 2004 and identified \$26.6 million of potential increased contract costs for years 2005 through 2010, due to a change in RPSC's disclosed accounting practices. These audits cited RPSC's parent, Raytheon Technical Services Company (RTSC), for failing to comply with its federally disclosed accounting practices in its CAS disclosure statement. As a result, DOD, which is responsible for overseeing RTSC's compliance with its accounting disclosure statement, cited RTSC with a final determination of noncompliance for 2000-2002, and an initial determination of non-compliance for 2003-2004.

As of the end of this reporting period none of the \$56 million in claimed costs or the \$26.6 million of potential increased costs has been resolved. However, during the last six months the DOD contracting officer responsible for Raytheon withdrew his determinations of noncompliance as it affects \$21.3 million of questioned costs and the \$26.6 million of projected increased costs for the Centennial, Colorado RPSC office operations. The NSF contracting officer concurred with the change in the DOD position and in turn has proposed to allow the associated \$21.3 million of costs questioned by the auditors. As a corollary, the \$26.6 million of projected increased costs would also be considered allowable. Given the infrequent nature of such reversals of a determination of noncompliance and the large sum of money involved, we requested and are currently reviewing information provided by DOD and NSF to support their recent actions. Additionally, the DOD OIG has initiated a separate review to assess the reasonableness of the DOD contracting officer's decision.

Of the remaining \$34.7 million of questioned costs,⁹ NSF addressed \$6.9 million of the \$7.6 million in direct costs and fringe benefits for FYs 2000 through 2004 that were questioned because RPSC did not have documentation to show how

⁸ September 2004 Semiannual Report, pp. 15-16.

⁹ \$56 million - \$21.3 million = \$34.7 million.

the costs were allowable under Federal Acquisition Regulation or related to the NSF contract, or because RPSC charged estimated rather than actual fringe benefit costs to the NSF contract. NSF has proposed the recovery of \$3.05 million or 40 percent of the \$7.6 million in questioned direct costs; NSF did not sustain \$3.86 million because RPSC was subsequently able to support these costs. The remaining \$0.7 million of questioned direct and fringe benefit costs, an additional \$12.2 million in questioned over-ceiling indirect costs, and \$14.9 million in questioned Corporate and RTSC management costs will be resolved in future semiannual periods.

NSF to Clarify in Contracts When the Purchase of Alcohol is an Allowable Cost

An audit of a \$7 million NSF contract with Mayatech, which provides technical support for NSF's "Presidential Awards for Excellence in Mathematics and Science Teaching," questioned \$14,089 in claimed costs related to alcoholic beverages, because NSF's contract was not clear about its intent and legal basis to fund alcohol. During this semiannual period NSF resolved this audit report by allowing the questioned costs on its Mayatech contract and accepting the recommendation that NSF clarify in its future contracts when alcohol will be an allowable cost.

School District Must Repay \$91,191

An audit of two NSF awards to the Dallas Independent School District (DISD) totaling \$26.5 million found inadequate internal controls over record retention, cost sharing, participant support costs, and expenditure reporting, causing auditors to question \$91,216 of DISD claimed costs. DISD concurred with the auditors' findings and reported that it has taken steps to implement all of the report recommendations. During audit resolution, NSF reviewed the documentation submitted by DISD in support of its corrective actions and sustained \$91,191 of the questioned costs.

University Revises Policies and Procedures for Labor Costs and Subrecipient Monitoring

Auditors of a \$9.8 million award to the University of Hawaii (UH) found that over the five-year period of the award UH used budgeted percentages to charge time and effort cost sharing without making any adjustments to reflect changes in actual workload, and that UH could not locate some documentation to support subcontract costs. The audit resulted in a qualified opinion and identified approximately \$1.7 million in unverifiable labor cost sharing, approximately

\$265,449 of undocumented subcontract costs, and \$305,706 of undocumented subcontractor cost sharing. UH generally agreed with the findings and recommendations in the report and revised its policies and procedures to account for

labor costs and to monitor subrecipients. During audit resolution, NSF reviewed additional documentation that UH submitted in support of its questioned claimed costs and sustained \$22,202, or 8 percent, of the \$265,449 questioned subcontract costs.

Identification of Voluntary Faculty Effort Provided on Sponsored Projects Reduces Indirect Cost

A recent audit to assess the adequacy of accounting and reporting processes for labor costs charged to NSF grants at the California Institute of Technology (Caltech) found that the university needed to develop a system to provide accurate reporting of voluntary cost sharing by faculty members.¹⁰ Caltech generally agreed with the audit finding and recommendations. As such, it developed a new methodology to estimate the amount of voluntary faculty labor effort for projects, with no faculty salary reimbursements, to include in the organized research base used for negotiating its indirect cost rate. During the audit resolution, NSF worked with the cognizant audit agency to review the reasonableness of the new methodology. Using the new methodology, Caltech estimated that \$1.6 million of such voluntary labor effort was provided by faculty members on federally sponsored projects in FY 2005. Including the previously unreported amount in the organized research base lowered Caltech's indirect cost rate by one-half percentage point and resulted in the federal government reducing its reimbursement of FY 2005 indirect costs by approximately \$600,000.

NSF Continues to Improve Large Facility Management

In FY 2002, we issued an audit report on NSF's funding for major research equipment and facilities that recommended that NSF identify, record, and track the total cost of these large facility projects throughout the entire project lifecycle.¹¹ Based on NSF's recent development and update of a cost-tracking system for large facility projects, we have closed this recommendation. Once staff involved with tracking and overseeing these projects are trained on the use of the cost-tracking system, we will be able to close the last remaining recommendation from this audit.

This step represents further progress by NSF to fully respond to OIG recommendations regarding large facility management that began in FY 2001 with our Audit of the Financial Management of the Gemini Project.¹² Recommendations from this audit relating to the development of policies and procedures for the management of large facility projects remain open. We will continue to monitor NSF's efforts in this area to ensure that it adequately addresses the outstanding findings and recommendations related to large facility management.

¹⁰ March 2007 Semiannual Report, pp.18-19.

¹¹ September 2002 Semiannual Report, pp. 18-19.

¹² March 2001 Semiannual Report, pp. 6-7.

Work in Progress

Sufficiency of NSF's Cooperative Agreements for Large Facility Projects

As reported in our March 2007 Semiannual Report,¹³ the OIG has initiated an audit to determine whether the terms and conditions included in NSF's cooperative agreements for the management and operation of its large facilities projects are sufficient for NSF to provide stewardship over its programs and assets. We have chosen a representative sample of six facilities, currently in the operations phase, which together contain characteristics common to all of NSF's currently operating large facilities. Using these six facilities, we are conducting a series of four in-depth audits to determine the sufficiency of NSF's cooperative agreements to ensure: 1) accomplishment of programmatic goals; 2) financial and administrative accountability; 3) protection of NSF assets; and 4) compliance with laws and regulations. The first of these audits is underway with a report to be issued during the next semiannual period.

Audit of NSF Controls over the Collection, Storage, Access and Use of Personally Identifiable Information

The OIG has initiated an audit of the adequacy of NSF controls for electronic and paper forms of personally identifiable information. In response to recent breaches and data losses at federal agencies, both the Office of Management and Budget and Office of Personnel Management have issued directives to strengthen the protection of personal information from theft or loss. We will be reviewing NSF's processes and procedures to identify potential risks and assessing the adequacy of its controls to protect the personal information of its employees, visitors, principal investigators and reviewers.

Labor Effort at Universities

As first reported in our September 2005 Semiannual Report,¹⁴ the OIG is conducting a series of reviews to assess the adequacy of accounting and reporting processes for labor costs at NSF's top-funded universities. Approximately, one-third of all NSF award costs provided to universities are for salaries and wages, amounting to \$1.2 billion annually. Reviews performed to date at the University of Pennsylvania and the California Institute of Technology found systemic weaknesses in those universities' effort reporting systems raising concerns about the reasonableness of the labor effort charges and whether the level of effort promised was actually performed.

Additional audits of labor effort practices are being completed at the University of Illinois at Urbana-Champaign, the University of Utah, the University of California – Berkeley, the University of California - San Diego, and Vanderbilt University. These reviews are being performed by independent public accounting firms under contract to our office. We anticipate awarding contracts for audits of labor effort practices at another five universities in October 2007 and performing an audit at a sixth university ourselves.

¹³ March 2007 Semiannual Report, p. 25.

¹⁴ September 2005 Semiannual Report, p. 20.

Investigations

Civil and Criminal Investigations

Former Professor Pleads Guilty

On May 1, 2007, a former professor at a Tennessee university pled guilty to a federal felony charge of making a false statement under an NSF grant.¹⁵ When the professor entered the guilty plea, she admitted to sending university employees to a different state to conduct an evaluation project in support of the professor’s private consulting business. The evaluation project was separate from the professor’s work under the NSF grant at the university, and she was paid consulting fees separate from her university salary.

The university employees were not aware that this work was not part of their regular duties related to the NSF grant, and they submitted the travel claims to the professor. The professor presented the travel claims to the university for reimbursement under the NSF grant, knowing that the work was unrelated to the NSF grant. The professor also admitted that the false statements and other conduct caused a loss of between \$10,000 and \$30,000 and that she abused a position of trust as Principal Investigator (PI) on the NSF grant and center director at the university.

On July 30, 2007, the professor was sentenced to six months home confinement and 2 years probation, and ordered to pay restitution of \$25,598.

Former Research Center Employee Sentenced to Prison for Mail Fraud

As reported in a previous Semiannual Report,¹⁶ a former employee of an NSF-funded research center pled guilty to one count of mail fraud, in response to an indictment charging the former employee with seven counts of mail fraud. On June 25, 2007, the former employee was sentenced in U.S. District Court to 16 months in prison, 3 years of supervised release, payment of restitution of \$18,214.15, and payment of a special assessment of \$100. We referred the outcome of this investigation to NSF with a recommendation that the subject be debarred for a period of 5 years because she abused

¹⁵ The professor entered the plea in the U.S. District Court for the Middle District of Tennessee in response to a superseding information charging the professor with violation of 18 U.S.C. § 1001. The superseding information replaced a September 2006 indictment for one count of wire fraud and one count of mail fraud, as reported previously. September 2006 Semiannual Report, p.32.

¹⁶ March 2007 Semiannual Report, p.30.

HIGHLIGHTS	
Civil & Criminal Investigations	25
Administrative Investigations	29
Other Matters	37

her position of trust and could readily obtain the same type of employment elsewhere, as well as the fact that her actions were intended solely for her personal financial gain. NSF's decision is pending.

SBIR Phase II Grant Obtained Under False Pretenses is Terminated

We received a complaint that a PI and small business owner may have wrongfully received a Phase II grant from NSF's Small Business Innovation Research (SBIR) Program. The PI had been an officer and shareholder of the company that received the Phase I grant, but started her own company. Only a Phase I grantee (or an affiliate or successor) is eligible to receive a Phase II SBIR grant.

The PI submitted the Phase II proposal under the name of the original company (Phase I grantee), and listed herself as both PI and Authorized Organizational Representative (AOR). During the Phase II grant process, the PI, as AOR for the original company, told NSF that a "spin-off" company had been formed, and the Phase II research could only be conducted by the "spin-off"¹⁷ company and not at the original Phase I company. Based on the PI's representations as AOR for the original company, NSF accepted the change in grant entity from the original company to the PI's new company.

NSF requested investigative assistance after the President of the original company inquired about the Phase II SBIR grant. Our investigation found that the PI's new company was not an affiliate, or "spin-off," of the original company because the other officers were not aware that the PI negotiated the change of grant entity with NSF and did not approve the transfer of the Phase II grant to the new company. Based on the PI's misrepresentations, NSF terminated the grant to the PI's new company, thereby making \$274,999 available for other purposes. We referred the case to the Department of Justice, which declined to prosecute in lieu of strong administrative action by NSF.

Explicit Material Discovered on NSF Employee's Computer

We received information that an NSF employee's computer contained inappropriate material. The employee's hard drive was turned over to OIG in order to perform a computer forensic analysis. Our analysis found over 8,000 inappropriate, sexually-explicit images, videos, and movie files. We determined that the employee had been accessing inappropriate web sites and downloading sexually explicit material onto his NSF computer during work hours. The employee violated NSF's policy regarding the personal use of NSF's communication resources by accessing, viewing, and downloading the sexually explicit material onto his NSF computer. We interviewed the employee and he acknowledged the inappropriate behavior. We referred this matter to NSF for action, and the employee's supervisor issued a counseling letter that was not placed in the employee's personnel file. The employee was subsequently terminated from his position for other reasons.

¹⁷ A "spin-off" occurs when a parent company transfers some of its assets to establish a separate company, and distributes the stock of the new company among the parent company's stockholders.

Investigation Identifies \$78,637 to Be Put to Better Use

During the course of an investigation, we identified \$78,637 to be put to better use at an Alaskan university. We received an anonymous allegation that the PI was using NSF funds to pay for travel unrelated to two NSF grants. We reviewed the documentation and identified \$78,637 of participant support costs, travel expenses, and indirect costs inappropriately charged to the two grants. The university credited the funds back to the grants, and they will be available for proper expenditures. While there was a problematic use of NSF grant funds, we determined that the allegation about travel abuse was not substantiated.

Material False Statements in a Proposal Resulted in Suspension of Grant and Referral to NSF for Administrative Action

We received a complaint that the executive director of an education-oriented research firm made false statements in an NSF proposal, and was awarded over \$2 million, in reliance in part on the false statements. Our investigation revealed that the firm submitted an altered letter of support to demonstrate a collaboration that it did not have. In response to our recommendation, NSF suspended the grant during the course of the investigation. After a financial analysis, the U.S. Attorney's Office for the District of Massachusetts declined this case in lieu of strong administrative action by NSF. We referred this matter to NSF with a recommendation that the grant be terminated and the executive director be debarred for a period of 5 years. NSF's decision is pending.

PI Repeatedly Falsifies Grant Project Reports

OIG Investigations received a referral from our Office of Audit regarding material inaccuracies in a final report project for an NSF grant awarded to a university in Pennsylvania. The purpose of the grant was to facilitate collaboration between the PI and a foreign scientist. The NSF program manager told us he rejected the PI's final report because the foreign scientist told him (1) he did not know he was listed on the PI's grant as a collaborator; and (2) he had not even heard from the PI, much less collaborated with him.

The PI then submitted a revised final report which did not list the foreign scientist as a collaborator. When we first interviewed the PI, he insisted he collaborated with the foreign scientist, but he was unable to produce any evidence of collaboration. The PI asserted that he made an attempt to collaborate with the foreign scientist through the foreign scientist's supervisor, but due to restrictions on foreign travel after 9/11/2001, the foreign scientist was unable to visit. The foreign scientist said the person the PI indicated had never been his supervisor, and that person also did not recall receiving an invitation from the PI.

Because the PI made false statements to NSF in the final project reports and his statement to us, we referred the matter to the Department of Justice. It declined to prosecute in lieu of administrative action by NSF. The PI's home institution returned \$6,720, the funds designated as Participant Support, and prohibited the PI from serving as PI or co-PI on any federal grant. We recommended the Director debar the PI for 3 years. A final decision is pending.

Compliance Plan Oversight Efforts

OIG investigations of civil and criminal fraud committed against NSF by institutions, universities, public school systems, or corporations are frequently resolved through the offices of United States Attorneys. Terms of sentences and/or settlement agreements typically include the requirement for mandatory Compliance Agreements, based generally upon the principles of the United States Sentencing Commission's Federal Sentencing Guidelines.¹⁸ The Compliance Agreements include the establishment of reasonable compliance standards and procedures; identification of specific high-level personnel responsible for the program; exercise of due care in assignments with substantial discretionary authority; effective communication of standards and procedures; establishment of monitoring, auditing, and reporting systems; consistent enforcement of standards; and a system to respond appropriately to violations. Most such agreements run for 5 years.



Ginna Ingram poses with colleagues who contributed to her article on compliance programs published in the most recent *Journal of Public Inquiry*.

For the duration of such agreements, OIG staff members work in conjunction with NSF personnel to monitor and oversee the implementation of the required actions. The goal is the establishment of processes and structures at the institution to protect federal NSF funds. We hope and expect that these compliance programs, although imposed as a result of civil or criminal settlements, will lead to a more compliance-oriented environment and will contribute to enhanced operational integrity.

Though the majority of parties subject to such agreements have embraced them as a means of improving their compliance efforts and fostering ethics and integrity, one university was found to be in breach of the agreement for failing to provide a required annual audit. OIG and NSF contacted the university and determined that no effort had been made to conduct the required audit. The university was then found to be in breach of the agreement. The university, already on NSF's list of high-risk organizations, was at risk of losing all NSF funds. The audit was subsequently conducted and the university assured OIG and NSF that the problem will not be repeated with this year's annual audit.

¹⁸ U.S.S.G. §§ 8B2.1, 8C2.5(f), & 8D1.4(c)(1).

Administrative Investigations

Actions by NSF Management

NSF Proposes to Debar a PI for Five Years

In our last Semiannual Report,¹⁹ we discussed the civil settlement of a False Claims Act case between the Department of Justice and an institution resulting from its wrongful drawdown and expenditure of over \$27,000 in NSF funds after an NSF grant had expired. This settlement resulted in a recovery of over \$52,000.

On August 22, 2007, NSF issued a Notice of Proposed Debarment for a period of five years against the individual responsible for the wrongful drawdown because of the gravity of the misconduct. This is only the third time in its history that NSF has proposed a 5-year debarment. The subject may file an appeal within 30 days of the Notice or the debarment will become final.

Professor Reviews Proposal for NSF, Then Plagiarizes From It Into His Own Proposal

Our inquiry into a significant allegation of plagiarism confirmed that a proposal by a professor at an Oregon university contained extensive sections of text and multiple figures duplicated from an earlier proposal that NSF had asked the professor to review. After the professor did not respond to our request for an explanation, we referred the investigation to the university.

The university investigation revealed that the professor kept a copy of the NSF proposal that he had been asked to review, and then re-used text and figures from that proposal in his own proposal, without permission and without attribution. The professor claimed that he did not recognize that the text and figures were not his own, and that his actions were unintentional. However, the university concluded that his actions were intentional, violated academic standards of scholarship, and that his plagiarism was therefore an act of research misconduct. The university prohibited the subject from submitting external proposals for 3 years, required 2 years of subsequent official prior review of any external proposals submitted, and placed a letter of reprimand in the professor's personnel file.

We agreed with the university's conclusions. Based on our recommendations, NSF: made a finding of research misconduct; sent a letter of reprimand to the professor; proposed that the professor be debarred from receiving federal funds for a period of 3 years; required that a responsible official submit assurances to NSF OIG for a period of 3 years after debarment; prohibited the professor, for a period of 3 years, from serving as a peer reviewer of proposals; and required that the professor provide certification to NSF OIG that he has attended an ethics training class.

¹⁹ March 2007 Semiannual Report, p.29.

Deputy Director Finds Research Misconduct in Plagiarism Cases

NSF's Deputy Director made research misconduct findings in several cases we forwarded to her office:

- Our most recent Semiannual Report²⁰ summarized an egregious case of a New York university professor who plagiarized extensive amounts of text and figures into three proposals submitted to NSF. Consistent with our recommendations, the NSF Deputy Director made a finding of research misconduct; debarred the professor for 3 years from receiving federal funds; prohibited the professor from serving as a reviewer, consultant, or advisor for NSF, and from having responsibility for any other agreements with the federal government; and required that, for 3 years following the period of debarment, the professor certify, and a responsible official of his employer provide an assurance, that any NSF proposals or reports submitted do not contain plagiarized, falsified, or fabricated material. The professor appealed these actions to the NSF Deputy Director, who upheld the actions taken. The professor then appealed to the NSF Director, who also upheld the actions stating the debarment was necessary to “protect the interests of the Federal government.”
- A second professor from a New York university plagiarized extensive text from multiple sources into a proposal submitted to NSF, and into two concurrent research publications acknowledging NSF support.²¹ In his defense, the professor claimed that a post-doctoral researcher provided the plagiarized text; however, the institution's investigation proved he was solely responsible. Consistent with our recommendations, NSF made a finding of research misconduct; proposed that the professor be debarred from receiving federal funds for a period of 2 years; prohibited the professor from serving as a reviewer of NSF proposals for 2 years; required, for a period of 2 years after the debarment period, that the professor certify that proposals or reports submitted to NSF do not contain plagiarized, falsified, or fabricated material; required, for a period of 2 years after the debarment period, that the professor submit assurances by a responsible official of his employer that any proposals or reports submitted to NSF do not contain plagiarized, falsified or fabricated material; and required that the professor complete an ethics training course on plagiarism.
- An institution concluded that the PI's act of plagiarizing into four proposals was part of a “pattern of behavior and manifest serious ethical shortcomings.” NSF agreed with our recommendations to make a finding of research misconduct against the PI.²² For the next 2 years, the PI is required to personally certify and to also obtain assurances from his supervisor that any proposals he submits to NSF does not contain any plagiarized, falsified, or fabricated material. He must also attend a research ethics course within 8 months and provide a certification of attendance and a copy of the course syllabus to OIG.

²⁰ March 2007 Semiannual Report, p.34.

²¹ March 2007 Semiannual Report, p.34.

²² March 2007 Semiannual Report, p.35-36.

- A Texas university professor resigned from his tenure-track position after a university investigation concluded that he had plagiarized text into CAREER proposals submitted to NSF.²³ In addition, the institution determined that the professor displayed a pattern of plagiarism by copying text into proposals submitted to other agencies. Consistent with our recommendations, NSF made a finding of research misconduct, required the professor to attend a course on research ethics, and, for a period of 2 years from the date of the finding, required the professor to certify that any proposals that he submits to NSF do not contain any plagiarized, falsified, or fabricated materials.
- Finally, as noted in our March 2007 Semiannual Report,²⁴ we recommended NSF make a finding of research misconduct, specifically plagiarism, against a co-PI. We also recommended NSF require a certification from the co-PI for 1 year stating nothing she submits to NSF violates NSF's research misconduct regulation. The Deputy Director agreed with our recommendations and implemented them.

Reports Forwarded to NSF Management

Student Claims "Laziness" Caused Him to Fabricate/Falsify Data in Four Manuscripts

In the most serious case of student misconduct our office has ever investigated, a graduate student at a Washington university admitted he falsified and fabricated NSF-funded research data in four manuscripts, three of which were published. Our office received the allegation following the university's inquiry. During the investigation, the student admitted he falsified and fabricated the data because of "a combination of lack of motivation, laziness and a lack of interest in the work (especially experiments)."

The university's investigation committee found that a preponderance of the evidence proved that the subject intentionally fabricated and falsified data. The university made a finding of research misconduct, dismissed the student from the university, and revoked his master's degree. The university also encouraged the removal of the publications from the co-authors' websites, retraction of the affected publications, and education of the university community about scientific misconduct.

We concurred with the university's findings and we have recommended that NSF: make a finding of research misconduct; send the subject a letter of reprimand; debar him for 3 years, require both certifications and assurances for 3 years following debarment, and bar the subject from serving as an NSF reviewer for 3 years.

Post-Doctoral Researcher Falsifies Data

A Pennsylvania university notified us it was conducting an investigation into an allegation of data falsification. The investigation focused on a figure in a paper, whose lead author was a post-doctoral researcher (the subject) working

²³ September 2006 Semiannual Report, p.39.

²⁴ March 2007 Semiannual Report, p.35.

in an NSF-supported PI's laboratory. When the questionable figure was initially brought to the PI's attention, she asked the subject to provide the raw data for review. The subject provided neither the raw data nor a suitable explanation. Subsequently, the PI asked the subject to leave her group and asked another researcher to review the subject's lab computer files related to the figure. None of the data files on the lab computer supported the behavior depicted in the figure. Instead, the researcher found a command file from the subject's plotting software that purportedly showed how the figure was created by manipulating existing data.

During his interview with the investigation committee, the subject agreed the data appeared falsified, but he denied any wrongdoing. He told the committee he prepared the first draft of the manuscript and the figure in question. The committee found none of the subject's data supported the figure as portrayed in the paper. In his defense, the subject alleged that the true data files had been deleted from the computer. However, no evidence could be found to support his assertion.

The committee found a preponderance of the evidence supported the conclusion that the subject falsified the figure, that it was done intentionally, and the falsification was a significant departure from the accepted practices in the physics community. The university's adjudicator reviewed the documentation and accepted the finding of the committee. Since the subject is no longer at the university, it took no action.

We concurred with the university's conclusion and concluded the subject's falsification was research misconduct. We recommended NSF take the following actions: send a letter of reprimand to the subject; debar the subject for 2 years; require certifications from the subject and his supervisor for 2 years after the debarment that his submissions to NSF are in compliance with NSF's research misconduct policy; require the subject to provide proof of the retraction of the published paper; and require the subject to attend an ethics class and provide a copy of the training material.

PI Copied Significant Text, Tries to Blame Post-Doc

We investigated an allegation of plagiarism in a proposal submitted from a New Mexico university. We found significant text and two figures copied from multiple sources, with copied material in nearly every section of the proposal. The proposal listed a PI and two co-PIs, all from different universities. We wrote each subject asking for an explanation and the two co-PIs responded saying the PI was responsible for the copied text.

In telephone discussions with the PI, he claimed that his former post-doctoral researcher prepared most of the material for a report submitted to a state agency. He said he incorporated material from that document into his proposal without checking whether it was properly referenced.

At that point, we referred the matter to the subject's university for investigation. The university committee contacted the post-doc, who refuted the subject's claims and admitted only limited writing, amounting to one paragraph and

material incorporated from one co-PI's paper (which included one figure). The committee decided not to dwell on the details of who wrote the text, but recognized that the subject, as the signatory to the NSF proposal, is responsible for the material contained in it and, accordingly, committed plagiarism.

The committee recommended the following sanctions: for 1 year, the subject is prohibited from submitting proposals as the sole PI (he must name a collaborator from the university as PI); for 3 years, the subject's proposals must be reviewed by two senior researchers before submission to a sponsor; and the subject must instruct new faculty members enrolled in the university's PI certification course on the seriousness of plagiarism and on the techniques to check their work. These recommendations were accepted by the university adjudicator as well as the subject.

We reviewed two of the subject's prior NSF proposals for plagiarism, one submitted before our inquiry began and one afterward. The proposal submitted before our inquiry began had smaller amounts of text copied from several sources. We concluded there was evidence of a pattern of plagiarism. We recommended that NSF: send the subject a letter of reprimand informing him NSF is making a finding of research misconduct; debar him for 1 year; require him to submit assurances by a responsible official of the University that any proposals he submits do not contain plagiarized, falsified, or fabricated material for 3 years require certifications from the subject for 3 years that all documents he submits to NSF are either his original work or are properly cited; and require the subject to take an ethics course and provide a copy of the training materials to us. A decision regarding this matter is pending.

Professor Plagiarizes in Four NSF Proposals

An investigation revealed that four proposals submitted to NSF by a Michigan university professor contained plagiarism. We initially received an allegation that two of the professor's NSF proposals contained plagiarism. The university investigated and found that the professor knowingly committed significant plagiarism in a total of four NSF proposals, as well as small amounts of plagiarism in numerous proposals he submitted to other funding entities. The university froze the professor's salary for 2 years, required him to receive and provide training on academic integrity, and required him to provide certifications to his department chair for 1 year that proposals he submits are free of plagiarism.

All of the professor's plagiarism was derived from sources available on the internet. In both his initial response to us and in his testimony in the university's investigation, the professor explained his view that material that he found on the internet, or that he considered to be common knowledge, or that did not contain technical content, did not warrant distinction and citation. He also perceived plagiarism to embrace only the misappropriation of someone else's ideas, as opposed to words that he viewed as conveying no significant ideas. However, in the course of our review of the university's investigation, the professor told us that he is now aware of and embraces the scholarly community's standards for quotation and attribution, and he has changed his practices appropriately.

We concluded that the professor knowingly copied a significant quantity of text and two figures in his four NSF proposals. We recommended that NSF's Deputy Director: send a letter of reprimand to the professor informing him that NSF has made a finding of research misconduct; require him to certify and obtain supervisory assurance that each proposal and report he submits to NSF does not contain plagiarized, falsified, or fabricated material for 3 years after the date of the finding of research misconduct; and require him to submit proof that he completed a research ethics course within 1 year of the finding of research misconduct. NSF's decision is pending.

PI Plagiarizes in Four NSF Proposals

Our investigation concluded that a PI at a Massachusetts university plagiarized text from several source documents into four NSF proposals, two of which were funded. As part of our initial review, the PI described the copied text as definitions or facts, all of which appeared in the background sections of the proposals. The PI claimed there was no intent on his part to omit any acknowledgments.

We did not accept his explanations, and referred the investigation to his institution. The institution's investigation committee concluded that in addition to plagiarized text in the three earlier proposals, the PI also plagiarized text in a fourth proposal, his most recent submission to NSF. The committee concluded the PI committed research misconduct and recommended the PI: receive a letter of censure; get appropriate training and education in this matter; provide certification and assurances for 2 years to the chair of his department that his proposals and reports follow accepted practices; and develop, implement, and deliver a presentation to new faculty on the acceptable practices in citing the work of others. The institution's adjudicator endorsed the finding and recommendations of the committee.

We concurred with the university's conclusion that the PI committed research misconduct. We recommended that NSF: send a letter of reprimand to the PI informing him that NSF has made a finding of research misconduct; for 3 years after the debarment, require him to certify and obtain supervisor assurance that proposals he submits to NSF do not contain plagiarized, falsified, or fabricated material; bar him from serving as a peer reviewer of NSF proposals for 2 years; and direct him to attend a course in research ethics. We await the Deputy Director's decision regarding this matter.

University Holds PI and Two Co-PIs Accountable for Plagiarized Text

A Wisconsin university held a PI and two co-PIs responsible for plagiarized material inserted into an NSF proposal by just one of the co-PIs. We determined that a proposal submitted to NSF by a university in Wisconsin contained text copied from multiple sources. We wrote separately to the PI and two co-PIs, who responded jointly that they were taking the allegation seriously—and they had referred the matter to the university. They stated some of the copied text was probably appropriate as it was in the public domain. However, they also acknowledged the inadequacy of citations in the literature review. The questioned

text was prepared by one of the co-PIs (the subject), a research associate, but the PI and other co-PI said they did not provide enough supervision during the preparation of the proposal.

In the interviews with the university's investigation committee, all three agreed that parts of the literature review in the NSF proposal were not correctly cited. The subject took responsibility for the copied text. The PI and co-PIs, in support of their belief that some of the text was in the public domain, referenced a CDC website stating "materials produced by federal agencies are in the public domain and may be reproduced without permission." The committee concluded that neither the concept of public domain nor the idea that content can be reproduced without permission implies that text written by another person can be copied without attribution.

The committee concluded this was a clear case of plagiarism and suggested the university require for 1 year that grant applications from the three investigators be certified by a committee of researchers. The university's adjudicator determined the act constituted plagiarism and all three subjects were responsible for the content of the grant proposal. The adjudicator accepted the committee's recommendation and concluded that all three investigators committed research misconduct.

We believe that the university's actions were appropriate and reflected high academic standards in holding the subject, the PI, and the co-PI all accountable for the contents of their proposal. However, we concurred with the university's assessment that the PI and the co-PI acted negligently (carelessly), which does not meet the threshold for a finding of research misconduct under NSF's regulation. We also concurred with the university that a preponderance of evidence proves the subject's action was a significant departure from accepted practices.

We recommended that NSF send a letter of reprimand to the subject informing him he has been found to have committed research misconduct. Since the subject will have his grant proposals certified by a university-appointed committee of researchers for 1 year, we recommended that NSF require the subject to provide a copy of the committee's certification for 1 year. In addition, we recommended that NSF: require the subject to provide a certification that nothing he submits to NSF for a period of 1 year violates its research misconduct regulation; and require the subject to take an ethics class to better learn about ethical issues and scholarly standards regarding plagiarism.

Plagiarism On the Increase

Serious allegations of plagiarism received by OIG have been on the rise for the past several years. NSF takes plagiarism seriously, as illustrated by the agency's Proposal and Award Policies and Procedures Guide (PAPPG), where for two decades it has stated:

NSF expects strict adherence to the rules of proper scholarship and attribution. The responsibility for proper attribution and citation rests with authors of a proposal; all parts of the proposal should be prepared with equal care for this concern. Authors other than the PI (or any co-PI) should be named and acknowledged. Serious failure to adhere to such standards can result in findings of research misconduct.²⁵

Subjects of our plagiarism investigations often express the belief that NSF proposals are not held to the same standards as journal publications. However, NSF's PAPPG and its predecessors are very clear regarding the agency's expectation for proper citation to any reference materials used in the development of a proposal. This expectation extends to the use of reference materials from electronic web sites.

In recent years we have also seen an increase in the number of subjects who blame graduate students for plagiarized material in their proposals. Subjects claim they asked their graduate students to provide background summary material and then use that material directly in their proposal. In a number of these investigations, the graduate student had left the university and there was no documentation to prove a student ever provided the material. In these cases, professors have been held accountable for the plagiarism in their proposal.

If NSF believes that plagiarism is serious enough to warrant a finding of research misconduct, the consequences can be significant. Agency actions against a researcher can include a letter of reprimand, request for certifications from the researcher on future submissions, requests for assurances from the researchers Dean or Department Chair regarding future submissions, and debarment in the most egregious cases. Researchers should take great care when developing proposals, and especially when using summary materials provided by a graduate student or colleague. Each proposal's PI and any co-PIs are personally responsible for the content of that proposal and its adherence to the highest scholarly standards.

²⁵ NSF 07-140 at I-4. The language has changed little since it first appeared in the 1987 revision of Grants for Research and Education in Science and Engineering, NSF 83-57.

Other Matters

NSF Agrees to Enhance Oversight of Cost Sharing Compliance

In October 2004, the National Science Foundation changed its policy to eliminate cost sharing requirements imposed by NSF programs. The change in policy applied only to new solicitations, and did not affect prior or subsequent awards that promised cost-sharing contributions, even when not required to by a solicitation.

Having promised cost sharing, awardees are required to: meet their cost sharing commitments; maintain records of their contributions; and, if the total cost sharing commitment is \$500,000 or more, provide annual and final certifications of the amount of cost sharing provided. Because several recent investigations revealed significant failures to meet cost sharing commitments, we conducted a review of grantees' compliance with cost sharing reporting requirements, as well as NSF's oversight of those reports. While most awardees were meeting their cost sharing commitments, 24 of the 85 awards we reviewed had cumulative shortfalls ranging from approximately \$44,000 to nearly \$1.8 million. Numerous awards were missing cost sharing reports, or the reports contained inconsistent information.

The failure of awardees to provide clear information demonstrating that they were meeting their cost sharing obligations *shouldn't* raise a policy or procedural issue, because procedures are already in place to ensure that the NSF program officer reviews the information provided and takes action when necessary. However, our review indicates that those procedures are not always being followed. In fact, the extent of the missing reports and documented shortfalls was notable because for each of these awards the program officer and division director approved additional incremental funding despite inadequate documentation of cost sharing compliance. We investigated each incident to determine whether disparities in reporting and compliance reflect false statements or claims by certain awardees.

Under NSF's revised cost sharing policy, relatively few new awards involve cost sharing obligations, but those obligations should be met. We recommended that NSF develop an initiative to require program officers to review the cost sharing information provided by awardees carefully, take action when cost sharing commitments fall short, and ensure that in no circumstances will an awardee be provided further funding under an award when it has failed to provide the required information and certifications. NSF accepted our recommendation and implemented steps to ensure compliance with cost sharing obligations.



OIG summer interns celebrate an award to colleague John Merkel with Dr. Boesz and Bill Kilgallin.

The National Science Board has been asked to report to Congress on the impact of its policy to eliminate cost sharing. The response taken by NSF to our recommendation in this matter will help ensure that the cost sharing requirements in place for any current and future awards will be enforced.

Antideficiency Act Investigation Leads to Management Recommendations

We received an allegation that NSF had been conducting an internal investigation into a possible Antideficiency Act violation, a matter within our investigative purview.²⁶ We found that NSF had actually been processing a negotiated settlement of a contract claim received in fiscal year (FY) 2007 for FY 2006 contract costs, and that the claim created the potential for a violation of the Act, depending on the availability of FY 2006 funds and the validity of the claim.

NSF ultimately negotiated a 50% reduction in the costs as part of a proposed settlement of the contract claim, and eventually determined that sufficient FY 2006 funds to pay the negotiated settlement could be obtained by deobligating funds not spent under other contracts, and paid the claim using those funds. Thus, no violation of the Act occurred.

In the course of the investigation, OIG noted certain aspects of NSF's contracting and budget functions that warrant further evaluation by NSF. First, OIG recommended that NSF develop better policies for managing the risk of simple human error in reviewing and analyzing financial documents in routine contracting transactions, and incorporate those policies into its Contracting Oversight Program.

Second, because of the substantial responsibility placed on COTRs and the lack of useful reference materials, OIG recommended that NSF accelerate publication of a planned COTR handbook, noting that a well-trained COTR can and should function as an important management control.

Third, NSF did not appear to review the available universe of contracts and other sources of FY 2006 funds for available excess funds to pay this claim for at least 8 months after the potential appropriation deficiency became known. NSF's delay was in part an effort to reserve funds to pay for indirect-rate adjustments and other unanticipated charges. The contractor's claim, in combination with NSF's delay in resolving the claim, gave rise to the allegation we investigated. OIG therefore recommended that NSF review its procedures for responding timely to potential appropriation deficiencies.

²⁶ The Antideficiency Act provides that government employees may not obligate or spend more government funds than Congress provides to agencies, or make purchases or contracts before funds are made available by Congress. Violations of the Act must be reported to the President, Congress, and the Comptroller General, and violators are subject to civil and criminal penalties.

Statistical Data

Audit Data

Audit Reports Issued with Recommendations for Better Use of Funds

		Dollar Value
A.	For which no management decision has been made by the commencement of the reporting period	\$1,900,000
B.	Recommendations that were issued during the reporting period	\$45,240
C.	Adjustments related to prior recommendations	\$0
Subtotal of A+B+C		\$1,945,240
D.	For which a management decision was made during the reporting period	\$0
	i) Dollar value of management decisions that were consistent with OIG recommendations	\$0
	ii) Dollar value of recommendations that were not agreed to by management	\$0
E.	For which no management decision had been made by the end of the reporting period	\$1,945,240
For which no management decision was made within 6 months of issuance		\$1,900,000

Audit Reports Issued with Questioned Costs

		Number of Reports	Questioned Costs	Unsupported Costs
A.	For which no management decision has been made by the commencement of the reporting period	23	\$61,915,138	\$3,080,693
B.	That were issued during the reporting period	19	\$578,061	\$277,299
C.	Adjustment related to prior recommendations	-1	-\$44,101	\$0
Subtotal of A+B+C		41	\$62,449,098	\$3,357,992
D.	For which a management decision was made during the reporting period	12	\$1,570,915	\$541,939
	i) dollar value of disallowed costs	N/A	\$141,932	N/A
	ii) dollar value of costs not disallowed	N/A	\$1,428,983	N/A
E.	For which no management decision had been made by the end of the reporting period	29	\$60,878,183	\$2,816,052
	For which no management decision was made within 6 months of issuance	12	\$60,483,959	\$2,722,591

Audit Reports Involving Cost-Sharing Shortfalls

		Number of Reports	Cost-Sharing Promised	At Risk of Cost Sharing Shortfall (Ongoing Project)	Actual Cost Sharing Shortfalls (Completed Project)
A.	Reports with monetary findings for which no management decision has been made by the beginning of the reporting period:	3	\$6,828,044	\$790,476	\$0
B.	Reports with monetary findings that were issued during the reporting period:	2	\$0	\$6,304	\$0
C.	Adjustments related to prior recommendations	0	\$0	\$0	\$0
Total of reports with cost sharing findings (A+B+C)		5	\$6,828,044	\$796,780	\$0
D.	For which a management decision was made during the reporting period:	1	\$0	\$50	\$0
	1. Dollar value of cost-sharing shortfall that grantee agreed to provide	0	\$0	\$0	\$0
	2. Dollar value of cost-sharing shortfall that management waived	1	\$0	\$50	\$0
E.	Reports with monetary findings for which no management decision has been made by the end of the reporting period	4	\$6,828,044	\$796,730	0

Status of Recommendations that Involve Internal NSF Management Operations

Open Recommendations (as of 3/31/2007)	
Recommendations Open at the Beginning of the Reporting Period	66
New Recommendations Made During Reporting Period	7
Total Recommendations to be Addressed	73
Management Resolution of Recommendations²⁴	
Awaiting Resolution	28
Resolved Consistent With OIG Recommendations	45
Management Decision That No Action is Required	0
Final Action on OIG Recommendations²⁵	
Final Action Completed	21
Recommendations Open at End of Period	52

Aging of Open Recommendations

Awaiting Management Resolution:	
0 through 6 months	7
7 through 12 months	16
More than 12 months	5
Awaiting Final Action After Resolution	
0 through 6 months	0
7 through 12 months	6
More than 12 months	18

²⁴ "Management Resolution" occurs when the OIG and NSF management agree on the corrective action plan that will be implemented in response to the audit recommendations.

²⁵ "Final Action" occurs when management has completed all actions it agreed to in the corrective action plan.

List of NSF and CPA Performed Reviews

Report Number	Subject	Questioned Costs	Unsupported Costs	Better Use of Funds	Cost Sharing At-Risk
07-1-016	VECO Polar Resources Disclosure Statement & Cost Impact Proposal	\$0	\$0	\$0	\$0
07-1-017	Supplemental report to #06-1-023	\$0	\$0	\$0	\$0
07-1-018	BIOS Bermuda Biological Station for Research, Accounting System	\$0	\$0	\$0	\$0
07-1-019	Abt Associates	\$22,716	\$0	\$0	\$0
07-1-020	University of Maryland Baltimore County	\$174,655	\$0	\$0	\$0
07-2-006	FISMA 2007 Independent Evaluation Report	\$0	\$0	\$0	\$0
07-2-007	FY2007 FISMA Independent Evaluation Summary	\$0	\$0	\$0	\$0
07-3-002	Internal Quality Control Review of OIG Monitoring University of Hawaii	\$0	\$0	\$0	\$0
07-6-003	Quality Control Review of 12-04 Barrow Arctic Science Consortium	\$0	\$0	\$0	\$0
	Total:	\$197,371	\$0	\$0	\$0

NSF-Cognizant Reports

Report Number	Subject	Questioned Costs	Unsupported Costs	Cost Sharing At-Risk
07-4-003	12-05 Earthquake Engineering Research Center	\$0	\$0	\$0
07-4-004	6-04 Jackson Public School District	\$0	\$0	\$0
07-4-008	6-04 Atlanta Independent School District	\$0	\$0	\$0
07-4-018	6-04 Wisconsin Educational Partnership Initiative, Inc.	\$0	\$0	\$0
07-4-020	6-05 Columbus City School District	\$0	\$0	\$0
07-4-025	12-05 Santa Fe Institute	\$0	\$0	\$0
07-4-026	12-04 Barrow Arctic Science Consortium	\$89,000	\$89,000	\$0
07-4-027	12-05 Barrow Arctic Science Consortium	\$0	\$0	\$0
07-4-046	9-05 Joint Oceanographic Institutions, Inc.	\$0	\$0	\$0
07-4-047	6-06 Institute of Ecosystem Studies, Inc.	\$0	\$0	\$0
07-4-049	12-05 American Physical Society	\$10,000	\$0	\$0
07-4-050	12-05 Divergence, Inc.	\$0	\$0	\$0
07-4-051	12-06 Earthquake Engineering Research Center	\$0	\$0	\$0
07-4-052	6-05 San Diego Society of Natural History	\$0	\$0	\$0
07-4-053	6-05 Museum of Science	\$4,700	\$4,700	\$0
07-4-054	6-03 Columbus City School District	\$0	\$0	\$0
07-4-055	6-04 Columbus City School District	\$0	\$0	\$0
07-4-056	12-05 Horizon Research, Inc.	\$0	\$0	\$0
07-4-057	12-05 American Association of Physics Teachers	\$0	\$0	\$0
07-4-059	9-05 Universities Research Association	\$0	\$0	\$0
07-4-060	6-06 William Marsh Rice University	\$0	\$0	\$0
07-4-061	6-06 WEPI, Inc.	\$0	\$0	\$0
07-4-062	5-06 University of Tulsa	\$0	\$0	\$0
07-4-063	12-04 Consortium of Universities for Advancement of Hydrologic Science	\$0	\$0	\$0

07-4-064	12-05 Consortium of Universities for Advancement of Hydrologic Science	\$0	\$0	\$0
07-4-065	6-06 Keck Graduate Institute of Applied Life Sciences	\$0	\$0	\$0
07-4-066	6-06 Southwest Center for Educational Excellence	\$0	\$0	\$0
07-4-067	6-05 Computing Research Association, Inc.	\$0	\$0	\$0
07-4-068	6-05 Exploratorium	\$0	\$0	\$0
07-4-069	6-06 Exploratorium	\$0	\$0	\$0
07-4-070	6-06 Michigan State University	\$0	\$0	\$0
07-4-071	6-06 Harvey Mudd College	\$0	\$0	\$0
07-4-073	12-06 Carnegie Institute	\$0	\$0	\$0
07-4-077	6-05 Incorporated Research Institutions for Seismology	\$0	\$0	\$0
07-4-080	9-04 IOPD Management International, Inc.	\$0	\$0	\$0
07-4-081	9-05 IOPD Management International, Inc.	\$0	\$0	\$0
07-4-082	9-06 IOPD Management International, Inc.	\$0	\$0	\$0
07-4-083	8-06 WGBH Educational Foundation	\$154	\$154	\$154
	Total:	\$103,854	\$93,854	\$0

Other Federal Audits

Report Number	Subject	Questioned Costs	Unsupported Costs	Cost Sharing At-Risk
07-5-101	6-05 Tuskegee University	\$347	\$0	\$0
07-5-102	6-05 Georgia Tech Research Corporation-Georgia Institute of Technology	\$0	\$0	\$50
07-5-103	6-05 Ursinus College	\$94,838	\$94,838	\$0
07-5-134	9-05 Blackfeet Community College	\$1,000	\$1,000	\$0
07-5-135	6-05 University of Missouri	\$41,921	\$0	\$0
07-5-136	12-05 National Opinion Research Center	\$9,012	\$0	\$0
07-5-139	5-06 Our Lady of the Lake of San Antonio	\$2,115	\$0	\$0
07-5-140	6-06 University of Toledo	\$1,514	\$0	\$0
07-5-200	6-06 The College of Wooster	\$1,500	\$1,500	\$0
07-5-201	6-06 Maricopa County Community College	\$45,323,	\$31,823	\$0
07-5-202	6-06 University of Richmond	\$60,680	\$36,041	\$0
07-5-203	8-06 Stanford University	\$343	\$0	\$6,254
07-5-204	6-06 State of North Dakota	\$2,170	\$2,170	\$0
07-5-210	9-06 Smithsonian Institution	\$16,073	\$16,073	\$0
	Total:	\$276,836	\$183,445	\$6,304

Audit Reports With Outstanding Management Decisions

This section identifies audit reports involving questioned costs, funds put to better use, and cost sharing at risk where management had not made a final decision on the corrective action necessary for report resolution with six months of the report's issue date. At the end of the reporting period there were eight reports remaining that met this condition. The status of recommendations that involve internal NSF management is described on page 42.

Investigations Data

Civil/Criminal Investigative Activities

Referrals to Prosecutors	0
Criminal Convictions/Pleas	2
Civil Settlements	0
Indictments/Information	0
Investigative Recoveries	\$806,399.65

Administrative Investigative Activities

Referrals to NSF Management for Action	10
Research Misconduct Findings	4
Debarments	7
Administrative Actions	27
Certification and Assurance Actions ²⁶	17

Investigative Case Statistics

	<u>Preliminary</u>	<u>Civil/Criminal</u>	<u>Administrative</u>
Active at Beginning of Period	86	64	64
Opened	95	28	34
Closed	121	25	36
Active at End of Period	60	67	62

²⁶ NSF accompanies some actions with a certification and/or assurance requirement. For example, for a specified period, the subject may be required to confidentially submit to OIG a personal certification and/or institutional assurance that any newly submitted NSF proposal does not contain anything that violates NSF regulations.

Freedom of Information Act and Privacy Act Requests

Our office responds to requests for information contained in our files under the freedom of Information Act (“FOIA,” 5 U.S.C. paragraph 552) and the Privacy Act (5 U.S.C. paragraph 552a). During this reporting period:

- Requests Received 18
- Requests Processed 18
- Appeals Received 1
- Appeals Upheld 1

Response time ranged between 12 day and 19 days, with the median around 15 days and the average around 16 days.

Appendix

Management Challenges Letter

October 17, 2007

MEMORANDUM

To: Dr. Steven C. Beering
Chair, National Science Board

Dr. Arden Bement
Director, National Science Foundation

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

Subject: Management Challenges for NSF in FY 2008

In accordance with the Reports Consolidation Act of 2000, I am submitting our annual statement summarizing what the Office of Inspector General (OIG) considers to be the most serious management and performance challenges facing the National Science Foundation (NSF). We have compiled this list based on our audit and investigative work, general knowledge of the agency's operations, and the evaluative reports of others, such as the Government Accountability Office and NSF's various advisory committees, contractors, and staff.

This year's management challenges are again organized under six broad issue areas: award administration; human capital; budget, cost and performance integration; information technology; U.S. Antarctic Program; and merit review. Ten challenges are drawn from last year's list, some of which reflect areas of fundamental program risk that are likely to require management's attention for years to come. Two new management challenges appear on this year's list: USAP property plant and equipment, and audit resolution. We note that NSF continued to make progress this past year on several longstanding challenges.

If you have any questions or need additional information, please call me at 703-292-7100.

Award and Contract Administration

Post-award administration policies. NSF has worked toward developing and implementing an improved post-award administration regimen since 2002, when the OIG audit of NSF's financial statements first recommended that the agency strengthen its policies and practices. An effective post-award monitoring program should ensure that: awardees are complying with award terms and conditions and federal regulations; adequate progress is being made toward achieving the objectives and milestones of the program and; expenditures listed on NSF's financial statements are accurate. In FY 2007, NSF continued to make progress toward achieving those goals by correcting problems, such as poor documentation, that prevented the auditors from determining whether the program had been effectively implemented. Along with improving the quality and consistency of the documentation, the agency increased its oversight of high risk awardees by conducting 22 site visits and 115 desk reviews this year. NSF's administrative oversight of these awards has greatly improved over the past five years, and the financial statement auditors determined this year that it should no longer be classified as a significant deficiency. However, our auditors will continue to monitor NSF's efforts to follow up and act on problems identified in NSF's site visits and reviews.

The challenge for the agency going forward is to maintain its commitment to effective post-award administration and refocus its efforts toward improving the monitoring of *programmatic* performance. The responsibility for this activity resides with NSF's program officers, who need adequate time, written guidance, appropriate training, and effective monitoring tools to perform this vital function. But, since their primary responsibility is proposal review and award selection, little time is left for managing on-going awards. In addition, NSF provides limited guidance to program officers on how to oversee the programmatic performance of awardees, and no formal training is offered on the administrative and financial requirements contained in OMB Circulars. Finally, a recent OIG audit indicated that over the five-year period from May 1, 1999 to May 31, 2004, more than 45,000 (42%) required annual project reports on the progress of individual NSF awards had not been submitted. Without adequate support from the agency in the form of additional time, training, guidance, and monitoring tools, program officers may not be able to detect problems with an award in time to intervene.

Post-award oversight of cost-shared commitments by NSF awardees continues to pose a challenge to the agency. Although new cost-shared commitments by awardees have steadily decreased since the National Science Board decided to eliminate non-statutory cost-sharing requirements in 2004, our audits continue to find poorly documented cost-shared contributions on awards made before the Board acted. Last year, OIG auditors reviewed awards with more than \$13 million in cost-shared funds. In one case, a university was not able to document 90 percent of the \$2.1 million it claimed to cost-share. Recently the National Science Board decided to reconsider its policy on cost sharing. The Board has formed a task force to review the implications of their 2004 action and has been asked by Congress to report on the impact of suspending cost-sharing for existing programs that were developed around industry partnerships

and that historically required cost sharing. Whether or not cost sharing is reintroduced in the future, the challenge for the agency is to assure that award-ees fulfill their remaining cost sharing obligations, which are still significant.

Contract monitoring. The monitoring and administration of NSF contracts first appeared as an internal control deficiency in the FY 2004 audit of the agency's financial statements because NSF did not adequately review vouchers submitted by contractors who received advance payments. NSF has initiated corrective actions over the past two years, including reviewing vouchers submitted by larger contractors on a regular basis. It has also updated its contracting manual to strengthen its pre-award risk assessment guidance, contracting personnel roles, and contracting responsibilities to provide assurance that the problem will not recur.

However, contract monitoring remains a major management challenge because NSF does not have a comprehensive, risk-based system to oversee and monitor its contract awards and ensure that the requirements of each contract are being met. This year the financial auditors reviewed NSF's progress and identified additional areas for improvement in post-award contract monitoring activities. They found that the contracting manual lacks sufficient material on post-award monitoring, risk assessment, and risk mitigation procedures. In fact, the problems that have affected NSF's recordkeeping for its property, plant and equipment in Antarctica (see USAP management challenge) are a direct result of inadequate monitoring of an NSF contractor. The agency also needs a program to provide training for contracting officer's technical representatives and detailed policies and procedures that make clear what is required of them.

Management of large infrastructure projects. NSF's investment in large infrastructure projects and instruments such as telescopes and earthquake simulators presents the agency with a host of administrative and financial issues. In past audits, we have focused on the difficult challenge of managing the design, construction, and financing of these cutting edge projects and completing the facilities on time and within budget. The agency made progress this past year in addressing some of our longstanding concerns. For example, NSF has implemented our recommendation to establish a system that tracks the total costs of major equipment and facilities. Such information is necessary to maintaining effective project management during the construction phase and fostering an increased awareness of the total life-cycle costs of a large facility, including operations and maintenance. Training of agency staff on the new systems is scheduled for the coming year.

However, some of the issues we have raised in the past persist. While NSF has increased the personnel assigned to its Large Facilities Office to four, we are concerned that it is not adequately staffed to handle its increasing responsibilities for oversight of the full life-cycle of these facilities. Though the agency updated its facilities manual during the past year, it still has not completed the in-depth guidance necessary to carry out the broader policy. In addition, recommendations made last year by the Business and Operations Advisory Committee²⁷ to establish annual facility reviews, formal risk-assessments, and

²⁷ Report by the Facilities Subcommittee of the NSF Business and Operations Advisory Committee, June 10, 2006

a process for projecting how long the facility will meet future research needs, have not yet been implemented. Though progress was made on developing a guide for on-site visits, a final version of the guide has yet to be issued.

While NSF has improved its management of the construction phase of new facilities, it must continue to not only improve its management of and knowledge about the entire facility life cycle but also plan for the increased impact that facilities are having on NSF's portfolio of awards as a whole. NSF's challenge for managing future investments in facilities and infrastructure projects lies in the agency's ability to perform more comprehensive planning for the overall life-cycle of these projects, and to include consideration of project risk management principles in making funding and other significant decisions.

In addition, NSF needs to determine a method for making strategic portfolio-management decisions. Operating costs of large facilities are continuing to grow, as are the number of active facilities in all phases of development. NSF is now faced with making tough funding decisions among competing priorities. Proposed facilities are competing for scarce resources not only with other new facilities, but also with existing facilities and traditional single-investigator research. NSF's challenge is to create a portfolio management plan that takes into account these competing priorities and the research needs of the entire scientific community.

Audit resolution. Audit resolution, closure, and follow-up represent the final critical steps of the oversight process envisioned by the Congress when it passed the IG Act of 1978. Without properly developed and executed procedures to evaluate audit findings and correct the problems that have been identified, the value of audits and program reviews is largely lost, and a key element of an agency's internal control system is seriously impaired. It is vital that NSF ensure prompt and proper resolution of OIG audits, the complete and timely implementation of audit recommendations, and the optimal recovery of questioned costs. For unknown reasons, the historic rate at which NSF has sustained costs questioned by its auditors has been low relative to other government agencies. Another challenge for NSF is to ensure effective implementation of proposed corrective actions given resource constraints and the large number of NSF awardees. OIG plans to contract with a third party in FY 2008 to review this important agency responsibility.

Human Capital

Workforce planning. OIG has identified workforce planning as a management challenge since 2002, the year that NSF's Management Controls Committee first highlighted human capital as "a significant concern" during a long period in which its workload was growing much more rapidly than its workforce. By some measures, NSF's workload has become more manageable over the past two years as the number of program officers has risen from 385 to 438, effectively reducing the number of proposals handled per program officer from 113 in FY 2004 to 97 in FY 2006.

NSF appears to have made progress toward the goal of improving the planning process. During FY 2006, the agency developed a workload analysis tool to determine the FTE needs of the agency as a whole based on a directorate-by-directorate analysis. Although the tool is currently of limited use in allocating FTEs across directorates or prioritizing needed FTEs, it provides an objective basis for projecting and justifying the agency's overall staffing needs. Over the past year NSF has initiated a succession planning process for recruiting, developing, and training NSF's future managers. The agency also reports that a workforce plan aligned to the goals of the new NSF strategic plan has been completed and is being reviewed for compatibility with other key planning documents, such as the human capital plan and the succession plan.

However, in June 2007, OMB downgraded NSF's score for human capital because it did not deliver a skill gap assessment for all mission-critical occupations to the Office of Personnel Management (OPM). NSF has subsequently worked with OMB and OPM to revise the list of future deliverables and expects to recover its "green" status for human capital within the next two quarters. The agency acknowledges that it has other remaining human capital challenges, including distributing administrative functions more effectively, implementing the workforce and succession plans, and completing a new human capital management plan.

The agency is also considering potential solutions to the various issues associated with the employment of temporary professional staff known as "rotators". NSF has long valued rotators for the fresh scientific knowledge they bring to the agency, but are vulnerable to criticism for their lack of institutional knowledge and management skills, which are particularly important at the senior level. In 2008, NSF expects to initiate an executive-level mentoring and training program called "on-boarding" that will include learning modules specifically geared toward those who lack experience and knowledge about the ways of NSF and the federal government. The proposal came out of a report issued by a committee of senior staff tasked with assessing the adequacy of the agency's senior executive leadership in terms of quantity, quality, and balance between permanent and temporary professionals. The committee recommended that the agency improve the balance between permanent and temporary executive-level leadership across NSF's organizational units to ensure organizational stability, the retention of institutional knowledge, and the infusion of new talent. While senior management has accepted these recommendations, implementation will pose a challenge.

Administrative infrastructure. Inadequate office space and travel funds continue to constrain NSF's ability to administer its growing award portfolio by limiting the number of new hires that can be processed and on-site visits made to monitor the performance of awardees. The amount spent on office space has risen at a rate of just 6% per year, while funds available for travel have increased just 7% per year over the past 4 years, barely keeping pace with price increases. Meanwhile, the widespread perception of problems that has beset NSF's hiring and travel processing systems continued to produce low ratings from staff that participated in the most recent employee satisfaction survey. Both systems have been improved and upgraded over the past year, and the agency expects that this year's surveys will reflect increased satisfaction with these two systems. However, problems in integrating the travel and

financial systems in particular persist, causing inconvenience to the staff and consuming more of the traveler's time than necessary. The challenge for NSF is to continue to improve the systems so they are easier for staff to use.

Budget, Cost and Performance Integration

Performance reporting. The Government Performance and Results Act (GPRA) was enacted in 1993 for the purpose of making government agencies more results-oriented. The Act requires each agency to develop a strategic plan that establishes specific goals against which its performance can be measured. GPRA poses a significant challenge to agencies engaged in scientific research because the benefits are notoriously difficult to measure and in some cases may only become apparent over many years. To assist in this assignment, NSF convenes an Advisory Committee on GPRA each year to assess progress in achieving its strategic goals. As in past years, this year's committee made its evaluations based on a judgmental sample of awards chosen by NSF staff. The committee suggested that their conclusions would be more "robust" if it had better assurance that the awards selected by NSF for their review were representative of the entire project portfolio. The committee also stated that the issue, which had been raised in previous years, "needs to be addressed to enhance the credibility of the assessment process." Lastly, the committee expressed additional concerns pertaining to the portfolio balance of some strategic goal areas and the criteria it was asked to apply in carrying out its evaluation responsibilities.²⁸

Publicizing the results of scientific research is also important to advancing NSF's science and education goals. OIG issued two related reports during 2006 on disseminating the results of NSF-funded research to the public. In the first report, we recommended that the agency make publication citations for each research project that it funds available on its website.²⁹ In a follow-on report, OIG assessed interest among NSF's stakeholders and managers in making even more information about research outcomes available to the public, and found strong interest in providing brief summaries of the results of each project NSF funds on the agency website.³⁰ NSF agreed to take action in both cases and is in the process of implementing the recommendations. Most recently, the Congress has mandated through legislation that the agency report research results. The America Competes Act (Public Law No. 110) requires that NSF ensure that all final project reports and citations of published research documents resulting from research funded, in whole or in part, by the agency are made available to the public in a timely manner and electronically through NSF's website. The agency should expeditiously implement this provision in order to further the public's knowledge and understanding of scientific research, assist researchers in building on prior work in their fields, and ultimately make its operations more transparent and accountable.

Cost information. Managerial (cost) accounting information is used to evaluate operational effectiveness and efficiency. However, NSF does not collect enough information about its operational costs to enable its managers

²⁸ Report of the Advisory Committee for GPRA Performance Assessment FY 2007, pp. 10-11

²⁹ NSF's Policies on Public Access to the Results of NSF-Funded Research, February 2006, OIG 06-2-004

³⁰ Interest in NSF Providing More Research Results, September 2006, OIG 06-2-013

and oversight officials to adequately assess its past performance or to provide a historical context that would inform future decisions. We continue to believe that the measurement and comparison of inputs to outputs is essential to any

meaningful review of an organization's efficiency and that NSF would greatly benefit by adding this capability. In recent years, the agency has enhanced its cost accounting system so it can track costs according to strategic goals, as well as the ten investment categories that are subject to OMB evaluation. While the current system provides aggregated costs that may be useful in assessing strategy, it does not track the costs of NSF's internal business processes and activities, such as soliciting grants, conducting merit reviews, or performing post-award grant administration. Such information would have been especially useful in evaluating the costs and benefits of many of the recommendations to re-engineer its business processes that the agency received as a result of its recent Business Analysis contract. The challenge for NSF is to obtain such information at a modest expense and without placing an additional recordkeeping burden on staff.

Information Technology

Implementing enterprise architecture. Enterprise architecture (EA) is a key component of the President's Management Agenda and its Expanded Electronic Government initiative. EA refers to a blueprint for organizational change that describes, in both operational and technological terms, how an entity currently operates and how it intends to operate in the future. It also includes a plan for transitioning to this future state. A well-defined EA is an essential tool for leveraging information technology (IT) in the transformation of business and mission operations.

In 2006, the Government Accountability Office (GAO) issued a report on the progress made by 27 federal departments and agencies toward establishing EA programs. GAO found that NSF lagged behind all but four of the agencies studied, satisfying only 52 percent of GAO's core elements for effective EA management. In 2007, the Office of Management and Budget (OMB) reviewed NSF's EA program, rated the program as "Green" both overall and in each individual assessment area, and gave it one of the highest scores of the 26 programs it reviewed. However, OMB also made several recommendations pertaining to various elements of EA such as transition strategy, cross agency initiatives, value measurement, outcomes, and performance data. NSF has developed a plan to address these recommendations as it continues to implement its EA program.

Successful implementation of its EA program is critical to almost all of NSF's activities, and should result in both cost savings and improved performance. Some of the desired outcomes NSF describes in its EA Management Guide are fewer applications, reduced system complexity, and improved application and systems interoperability, data integration, and information sharing. In particular, we note that navigating NSF systems to get coordinated financial and programmatic information can be difficult and may impede the efforts of program managers and other staff from overseeing the financial and administrative requirements of their awardees. We, therefore, consider EA to be a challenge that continues to require management attention and support.

United States Antarctic Program

USAP long-term planning. At a time of growing public interest in scientific research, the U.S. Antarctic Program (USAP) carries a higher profile than many other NSF-funded projects. The agency'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. Like a small government, OPP provides basic services through a number of contractors to as many as 3000 Americans who reside and work in Antarctica, as well as the infrastructure, instrumentation, and logistics necessary to support the research efforts of scientists from around the world. The successful operation of the USAP requires a unique management and administrative skill set. 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.

Over the past few years, several program reviews have focused on needed improvements in long-range planning for the USAP. A 2003 OIG audit recommended that NSF develop a life-cycle oriented capital asset management program to ensure that infrastructure is replenished as needed and does not jeopardize the safety, security, or mission of those who locate in Antarctica.³¹ This recommendation remains unresolved. However, during FY 2007, OPP began to address recommendations to improve long-range planning made by last year's Committee of Visitors (COV). The COV identified the important need for long-range planning to 1) take into account future research needs and their attendant logistical challenges, and 2) include improved projections for the cost of servicing specific research projects in order to ensure adequate planning. At the USAP annual planning conference attended by scientists, contractors, and NSF staff, OPP presented future infrastructure improvements that are either being planned or contemplated and listened as researchers discussed their future needs for services and technology. In response to the second recommendation, OPP presented a new costing methodology at the conference aimed at simplifying cost projections and making them more accurate. However it is too soon to know if this approach will resolve the issues identified by the COV.

Information technology systems also play an essential life-support role in such a harsh environment. The evaluation report our office is required to prepare under the Federal Information Security Management Act (FISMA) noted again in 2007 that NSF needed to make improvements in the USAP operating platform and in disaster recovery, though progress had been made in both areas.³² The agency is funding studies on what course of action will best address the problems raised in the report. The lack of a disaster recovery plan means that USAP may not be able to recover in a timely or complete manner from a significant incident, possibly resulting in USAP incapacity to carry out its life-support mission at the Antarctic bases. The risks inherent in the USAP program create a significant ongoing challenge for NSF.

³¹ Audit of Occupational Health & Safety and Medical Programs in the United States Antarctic Program, OIG 03-2-003, March 2003

³² NSF Federal Information Security Management Act, 2007 Independent Evaluation

Property, plant, and equipment. In FY 2006, the financial statement auditors noted that NSF had not been verifying cost information submitted by its primary USAP contractor or by third parties providing shipping and transportation services. The cost of shipping construction materials to Antarctica is significant, sometimes more than that of the materials themselves, and is capitalized as part of the construction cost of the asset. The auditors also noted that NSF had not maintained original source documentation for USAP property plant and equipment (PP&E) acquisitions.

Without proper verification, as the auditors' FY 2006 report pointed out, NSF could not be certain that the cost information provided by the contractors was reliable. Therefore, NSF management could not have assurance that the millions of dollars related to PP&E carried on NSF's balance sheet are accurate. The auditors have recommended that NSF obtain documentation for capitalized property acquired in past years, implement documentation verification procedures for Antarctic contractor's FY 2007 and future activity, and maintain an electronic copy of significant source documentation examined during that verification process. In FY 2007, NSF began to verify accounting information from its primary contractor for current year activity, but not for prior years nor for transportation services.

During the past year, auditors have found numerous instances in which NSF's contractor did not record property transactions in a timely manner, support recorded transactions with the proper documentation, or properly calculate and record freight costs. The auditors found that NSF's oversight of the contractor's internal controls over the processing, recording, and reporting of PP&E needs improvement.

NSF and its contractor use various PP&E systems to capture and report their activities for the USAP. Financial information from those systems is not integrated with NSF's general ledger system so the data are more vulnerable to internal control problems and error, as the information must be manually reentered in each system. In addition, a majority of USAP PP&E financial activities originate from the contractor's outdated software, resulting in a manually intensive and time-consuming financial reporting process that is prone to human error. Because NSF's contractual relationship with the contractor is not permanent in nature, the change to another contractor also exposes NSF to potential loss of data.

Merit Review

Broadening Participation in the Merit Review Process. At the core of NSF's operations is the merit review process, which is intended to ensure that the review and selection of proposals for funding are fair and conducted according to the highest standards. Broadening the participation of minorities and women in the merit review process continues to be a high priority of the agency and a critical step in accomplishing the broader goal of diversifying the STEM³³ workforce. NSF's 2006-2011 strategic plan elevated the status of broadening participation, stating that it will "expand efforts to broaden participation from

³³ Science, Technology, Engineering and Mathematics

underrepresented groups and diverse institutions in all NSF activities”.³⁴ During FY 2006, the funding rate for both underrepresented minorities and women increased from the previous year by one percentage point, but failed to keep pace with the increase in the funding rate for all PIs, which increased by two points. The funding rate for African American PIs ran counter to the trend of an increasing overall funding rate and slipped from 24% to 22%, three points below the rate for all PIs. Year-to-year variation in the funding rate of any particular group is not necessarily a cause for concern, but it should be monitored to determine if there are any developing trends that require further review or corrective action.

Although NSF cannot legally require its merit panel reviewers to provide demographic information, it has since 2001 requested that they provide such data to determine the extent to which underrepresented groups participate in the NSF reviewer population. The percentage of reviewers who report demographic information has increased from just 9% in 2002 to 25% in 2006. Among reviewers who voluntarily provided demographic information, 36% indicated that they were members of an underrepresented group, a proportion that has remained fairly stable over time. Last year, both the National Science Board and the Advisory Committee on GPRA recommended that NSF improve the information in the reviewers database. In its most recent report, the Committee on Equal Opportunities in Science and Engineering recommended that NSF “survey and report annually on the participation of women, underrepresented minorities, and persons with disabilities in each review panel, advisory committee, and committee of visitors”.³⁵ Because developing the full potential of underrepresented groups is likely to confer important social and economic benefits, the effort to broaden participation will continue to be an important challenge facing NSF.

³⁴ National Science Foundation Strategic Plan FY 2006-2011, pp. 9-10

³⁵ 2005-2006 CEOSE Biennial Report to Congress, p.32

Reporting Requirements

Under the Inspector General Act, we report to the Congress every six months on the following activities:

Reports issued, significant problems identified, the value of questioned costs and recommendations that funds be put to better use, and NSF's decisions in response (or, if none, an explanation of why and a desired timetable for such decisions). (See pp. 5, 13, 39)

Matters referred to prosecutors, and the resulting prosecutions and convictions. (See pp.25, 47)

Revisions to significant management decisions on previously reported recommendations, and significant recommendations for which NSF has not completed its response. (See pp. 21, 46)

Legislation and regulations that may affect the efficiency or integrity of NSF's programs. (See p. 7)

OIG disagreement with any significant decision by NSF management. (None)

Any matter in which the agency unreasonably refused to provide us with information or assistance. (None)

ACRONYMS

AOR	Authorized Organizational Representative
CASB	Cost Accounting Standards Board
CFO	Chief Financial Officer
CO	Contracting Officer
COTR	Contracting Officer's Technical Representative
COI	Conflict of Interest
COV	Committee of Visitors
DACS	Division of Acquisition and Cost Support
DCAA	Defense Contract Audit Agency
DD	Deputy Director
DGA	Division of Grants and Agreements
DIAS	Division of Institution and Award Support
DoD	Department of Defense
DoJ	Department of Justice
ECIE	Executive Council of Integrity and Efficiency
EPSCoR	Experimental Program to Stimulate Competitive Research
FAEC	Financial Audit Executive Council
FASAB	Federal Accounting Standards Advisory Board
FFRDC	Federally Funded Research and Development Centers
FISMA	Federal Information Security Management Act
FOIA	Freedom of Information Act
GAO	Government Accountability Office
GPRA	Government Performance and Results Act
HHS	Department of Health and Human Services
IG	Inspector General
MIRWG	Misconduct in Research Working Group
MREFC	Major Research Equipment and Facilities Construction
NASA	National Aeronautics and Space Administration
NSB	National Science Board
NSF	National Science Foundation
OECD	Organization for Economic Co-operation and Development
OIG	Office of Inspector General
OMB	Office of Management and Budget
OPP	Office of Polar Programs
PAPPG	Proposal and Award Policies and Procedures Guide
PCIE	President's Council on Integrity and Efficiency
PI	Principal Investigator
PFCRA	Program Fraud Civil Remedies Act
QCR	Quality Control Review
SBIR	Small Business Innovation Research
STC	Science and Technology Centers
USAP	United States Antarctic Program
USAO	United States Attorney's Office

National Science Foundation
Office of Inspector General
4201 Wilson Blvd., Suite 1135
Arlington, VA 22230
703.292.7100



[HTTP://www.nsf.gov/oig](http://www.nsf.gov/oig)
To report fraud, waste, or abuse,
call our hotline 1.800.428.2189

