Annual Audit Plan
FY 2009

**National Science Foundation
Office of Inspector General
September 30, 2008**

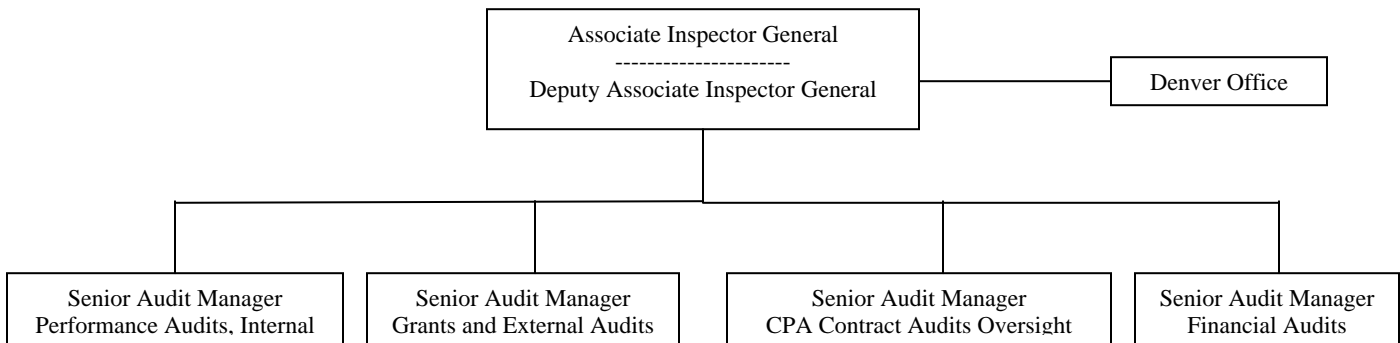**TABLE OF CONTENTS**

AUTHORIZATION

The Inspector General Act, as amended in 1988, authorizes an Office of Inspector General (OIG) for the National Science Foundation (NSF). The OIG is independent of NSF and reports directly to Congress and the National Science Board (NSB). By statute the OIG conducts and supervises independent audits and investigations relating to agency programs and operations and recommends policies that promote effectiveness and efficiency and prevent and detect fraud and abuse in such programs and operations.

OIG MISSION AND FUNCTION

Consistent with its statutory mandate and operational mission, the OIG performs an oversight role and does not engage in program operations. Its work is divided into two functional areas: investigations, which address allegations of serious wrongdoing, such as unauthorized use or theft of Federal funds and property, and audits and reviews, which assess the adequacy of business systems and processes, determine compliance with financial and Federal requirements, and identify ways to improve the effectiveness and efficiency of operations. In each area, the OIG strives to focus on substantive matters and work objectively and cooperatively without compromising its independence. The organizational units within OIG also collaborate to the extent necessary to carry out their separate responsibilities.

ORGANIZATION AND FUNCTION OF THE OFFICE OF AUDIT

The Office of Audit has an experienced audit and administrative staff led by the Associate Inspector General for Audit, the Deputy Associate Inspector General for Audit, and four Senior Audit Managers, as shown in the chart below:

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                  │   Associate Inspector General   │        │  Denver Office  │
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│Manager       │ │Manager       │      │Manager       │ │Manager       │
│Performance   │ │Grants and    │      │CPA Contract  │ │Financial     │
│Audits,       │ │External      │      │Audits        │ │Audits        │
│Internal      │ │Audits        │      │Oversight     │ │              │
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TYPES OF AUDITS

The Office of Audit is responsible for annual audits of NSF's financial statements, which include evaluating the agency's controls over financial reporting and information system security. The office also conducts internal and external performance audits and financial and compliance audits of grants, contracts, and cooperative

agreements funded by NSF. Many of these audits are performed with internal OIG auditors, but the office also contracts with independent public accounting firms, statisticians and other expert contractors to supplement its resources. These contractors also provide expertise necessary to accomplish the office's varied and complex audit projects.

Internal performance audits assess specific NSF programs or operations. External performance audits have varied objectives, such as ensuring the adequacy of awardees' controls over NSF awards. Performance audits provide NSF management with independent and objective assessments of whether desired program results and objectives are achieved effectively and efficiently and in accordance with applicable laws, regulations, policies, or procedures. The audits are intended to assist NSF management and/or awardees in improving controls and business practices and to identify and manage program risks at an early stage. Financial and compliance audits of grants determine whether costs claimed are allowable, reasonable, and properly allocated. They also may ascertain whether NSF awardees have adequate internal controls to administer, account for, and monitor NSF awards and to ensure compliance with NSF and Federal requirements. Furthermore, grant audits seek to identify practices at NSF and awardee institutions that may be modified so that funds can be used more effectively and efficiently for higher priority purposes.

Contract audits include audits of planned, current, or completed contract awards. Preaward contract audits determine if prospective contractors have adequate systems to manage and account for NSF funds and have submitted adequate cost and pricing data. They also determine if bidders' proposals are prepared in accordance with applicable Federal requirements and cost accounting standards and if their proposed costs are reasonable. Active-contract audits review whether incurred costs are allowable under the terms and conditions of the contract, as well as the adequacy of the accounting systems used to claim the costs. Closeout audits determine if costs incurred on expired contracts are allowable.

OIG audits, whether performed in-house or conducted by independent public accounting firms or government auditors under contract with OIG, are performed in accordance with the Controller General's Government Auditing Standards.[1] These Standards are designed to ensure the integrity and competency of the audit process and the quality of the audit report.

Oversight of A-133 Audits

The office also reviews annual audit reports submitted by NSF grantees. These audits are conducted in compliance with the Single Audit Act and Office of Management and Budget (OMB) Circular A-133, which requires non-Federal entities expending $500,000 or more in Federal funds in a year, to undergo an audit by an independent public accounting firm or state auditor of their financial statements and compliance with

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[1] See GAO-07-731G, *Government Auditing Standards: July 2007 Revision.* IG Offices are required by statute to conduct audits under these standards.

laws, regulations, and award conditions. The purpose of the audits is to provide Federal agencies with information on how government funds are managed and spent.

The Office of Audit reviews these resulting reports for findings and questioned costs related to NSF awards and to ensure the reports comply with OMB Circular A-133 requirements. The office also performs oversight reviews of some of these A-133 audits of NSF grantees to assess the quality and reliability of the audits for informing NSF of the financial risks of its funded institutions. These reviews are particularly important in light of a recent study on the quality of A-133 audits conducted by the OIG community.

The President's Council on Integrity and Efficiency (PCIE) and the Executive Council on Integrity and Efficiency (ECIE) analyzed a statistical sample of 208 audits selected from a universe of more than 38,000 audits. In June 2007 they issued their findings and recommendations in the *Report on National Single Audit Sampling Project*. One of the report's findings was that for entities expending at least $500,000 of Federal awards but less than $50 million, only 48 percent of the A-133 audits were considered to be of acceptable quality.

In response to the report's recommendations, OMB and the American Institute of Certified Public Accountants have established several workgroups and are collaborating to revise the criteria, standards and guidance for the A-133 audits, establish training requirements for auditors performing these audits, and develop more effective processes for addressing unacceptable audits. Because NSF relies extensively on A-133 audits to help assess the relative risk of NSF-funded entities, NSF OIG personnel are participating in the OMB workgroup dedicated to revising the checklists used by Federal agencies to conduct initial reviews and quality controls reviews of A-133 reports. The OIG also will continue to perform quality control reviews of A-133 audits of selected organizations receiving NSF funds.

FY 2009 AUDITS

OIG audits focus on issues of substantial concern to the Congress, the Administration, and NSF. To identify these issues the Office of Audit researches a number of sources including applicable Federal statutes, Congressional documents, Executive branch guidance, and reports issued by other stakeholders. Additional sources of information include National Science Board (NSB) meetings and recommendations to NSF, NSF's strategic plan, reports by NSF's Committees of Visitors and Advisory Committees, and NSF's assessment of risky awards. The OIG also solicits audit ideas from NSF and the NSB annually. To develop the audit plan for FY 2009 specifically, the OIG referred to: 1) the America COMPETES Act of 2007; 2) NSF's request for FY 2009 audits, 3) OIG's assessment of NSF's top management challenges,[2] and 3) OIG's analyses of NSF awards and awardees to assess the risk of mismanagement of NSF funds.

The analysis of these diverse sources of guidance and information resulted in four themes for the FY 2009 audits: return on taxpayer investment, NSF's Antarctic program, interagency agreements, and financial and programmatic accountability. These themes pertain to programmatic and financial/administrative functions at the preaward, active-award, and closeout stages of the award cycle and to NSF's infrastructure. By addressing these themes in the FY 2009 audits, OIG hopes to assist NSF in realizing the vision and goals in its FY 2006-2011 Strategic Plan, *Investing in America's Future*.

Return on investment includes comprehensive life-cycle analysis of projects, facilities, centers, and programs funded by NSF to ensure that performance goals and associated metrics to assess progress and final accomplishments are clearly stated at the outset; that interim and final performance are documented, analyzed and evaluated; and that the resulting evaluations are used to guide future investments. For example, the Office of Audit is reviewing the adequacy of NSF's cooperative agreements for overseeing and monitoring its large facilities program, for which in NSF's FY 2009 Budget Request to Congress it requested $1.1 billion for pre- and post-construction expenses and $147.5 million for acquisition, construction and commissioning costs. In addition, OIG is reviewing NSF's management of its centers' program, for which in FY 2009 NSF requested $290 million for 92 centers. Although the specifics of an analysis depend on whether the project is an award, a program, a center, or a large facility, the return on investment framework is comprehensive enough to apply to all types of investments in NSF's portfolio.

This framework includes planning, designing, selecting, constructing (if applicable), operating, managing, evaluating, and terminating projects, facilities, and programs. It also addresses Congressional interest in program evaluation. The return on investment framework also addresses three of the top NSF management challenges -- merit review; award administration; and budget, cost, and performance integration.

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[2] This Plan refers to the challenges discussed in OIG's *Management Challenges for NSF in FY 2008*, issued October 17, 2007. The Management Challenges for FY 2009 will be issued in the OIG Semiannual Report to Congress for the period ending September 30, 2008.

NSF manages the United States Antarctic Program (USAP) and through contractors, provides services, infrastructure, logistics, and instrumentation for Federally funded scientists and support staff who work in Antarctica. Because of the difficulties of overseeing facilities and operations under such remote and extreme conditions, the OIG has identified USAP as one of NSF's top management challenges since FY 1999. In addition, prior OIG audits of USAP contractor, Raytheon Polar Services Corporation (RPSC), have found that RPSC could improve its management of USAP health and safety programs, its internal controls over financial administration of the NSF contract, and its training of personnel responsible for recording contract costs and billing them to NSF. Prior OIG audits have also found that RPSC overcharged NSF for costs submitted under the USAP contract.

NSF's current contract with RPSC expires on March 31, 2010.[3] If NSF makes contract funds available, OIG plans to contract with the Defense Contract Audit Agency to conduct preaward audits of firms with proposals in the competitive range to determine the adequacy of their proposed costs, cost-accounting disclosure statements, and accounting systems. In addition, OIG is planning to survey researchers using the support services provided by the USAP contractor to determine the adequacy of these services. Both endeavors are designed to assess and as appropriate recommend actions to mitigate some programmatic and financial/compliance risks associated with NSF's management of USAP.

NSF enters into interagency agreements with other Federal agencies to make and administer research awards on their behalf. When NSF accepts this additional award responsibility, it receives a fee, known as administrative cost recovery (ACR), from the other agencies. In FY 2007 NSF collected $4.7 million in administrative fees to handle $101 million of research awards funded by more than 15 other Federal agencies. Because of the increasing number of interagency agreements and the dollar amount involved, NSF OIG plans to review NSF procedures for interagency agreements and in particular how NSF calculates and uses the ACR it receives from other agencies and whether these agreements comply with applicable Federal requirements. A prior audit at another OIG found that the agency's procedures for drafting, implementation and monitoring of interagency agreements needed improvement.[4]

Accountability of NSF and its awardees is mandated by Federal requirements including the Budget and Accounting Procedures Act, the Federal Managers Financial Integrity Act, the Chief Financial Officer Act, the Federal Financial Management Improvement Act, and numerous OMB Circulars. Conducting audits to evaluate financial and programmatic accountability is central to the OIG mission of promoting effectiveness, efficiency, and economy, and preventing and detecting fraud, waste, and abuse. Annual audits of NSF's financial statements assess its compliance with laws and

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[3] NSF's RPSC contract, award No. AIL-0000373, became effective November 11, 1999.
[4] See U. S. Department of Commerce, Office of the Inspector General; *Improvements are Needed in Commerce Agencies' Implementation and Oversight of Interagency and Other Special Agreements*, Report No. IPE-9460, September 2000).

regulations and other OIG audits evaluate financial or programmatic accountability at NSF and its awardees. For example, OIG has completed audits of labor effort charged to NSF awards by six universities that are part of a statistical sample of NSF's top-funded universities.   In FY 2009 OIG will continue these labor effort audits at six other universities and initiate similar audits at up to five additional universities. These audits address a significant risk to NSF because labor effort accounts for about one-third of all NSF award funds provided to universities.

SUMMARY OF PLANNED PROJECTS FOR FY 2009

1. Preaward Phase

Preaward reviews help reduce NSF's risk of award management problems at the selection stage. Ensuring that an awardee has both the programmatic and financial capability to successfully perform under the award reduces NSF's risk that funds may not be properly spent or that the project may not achieve the intended results. Before grants, contracts, and cooperative agreements are approved, preaward processes need to assess the quality of the applicant's work plans, which provide the framework for award performance and accountability and its capability to account for Federal funds. R&D agencies are required to fund a significant majority of awards through the use of competitive merit-based peer review to ensure quality. At NSF about 97 percent of awards are selected through an external and internal merit review process.

Merit Review

In FY 2007, 452 NSF program officers received 44,477 proposals, the largest number submitted to date. Program officers rely on outside experts chosen from a pool of more than 300,000 reviewers to evaluate proposals. The officers make decisions to award or decline proposals based on the experts' opinions, their own professional judgment, available funding, and the need for a balanced portfolio. Portfolio balance includes considerations such as potential contributions to math, science or engineering education and geographic, ethnic, and institutional diversity. Generally, NSF Division Directors make the final decision to approve or decline proposals.

Congress directed the NSB in September 2004 to review NSF's merit review process[5] and the NSB responded with a report that recommended improvements in the transparency and effectiveness of merit review while preserving program officers' ability to balance NSF's portfolio and identify the most innovative proposed research.[6] NSF also issues annual reports on the merit review process to the NSB and has established an internal Government Performance and Results Act (GPRA) working group to assess eight stewardship goals, including merit-review. The working group's evaluation of NSF's FY 2007 progress to address the NSB's recommended improvements on merit review, included in NSF's FY 2009 Budget Request to Congress, found that NSF had met the FY 2007 merit review milestones and targets.

NSB's recommended FY 2008 merit review goals included initiating a mandatory training course on merit review for NSF staff, continuing to develop metrics to assess the quality and transparency of the process, and sending a written response describing the review process and how the decision to fund or not to fund was made to 95 percent of the principal researchers who submit a proposal to NSF. The agency will report on its performance on these goals in its FY 2010 Budget Request to Congress.

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[5] H.R. Report 108-674, p. 144.
[6] *NSB-05-119.*

Scientific, geographical, institutional and demographic diversity of peer-review panels is critical to the quality of merit review. However, NSF is unable to ensure the diversity of its reviewer pool because only about 28 percent of reviewers (FY 2007) have reported demographic information. More fundamentally, because program officers, reviewers, and principal investigators tend to come from the same academic networks, professional associations, and institutional pools, there is a risk that institutions and principal investigators outside established networks are at a competitive disadvantage in the merit-review process. For example, from FY 2002 to FY 2007 about 75% of NSF awards went to the top 100 academic institutions that NSF funds.

Reviewer burnout can diminish the quality of merit review. Burnout is especially possible given the 50 percent increase in the number of proposals received since 2000. During FY 2007 approximately 45,000 reviewers served on panels, received a proposal for mail review, or both; and about 30,000 or 67 percent of these individuals had reviewed NSF proposals previously. NSF's GPRA working group has established broadening participation, including increasing the diversity of the pool of researchers who perform merit review, as one of its stewardship goals. Specifically, in FY 2007 one of the stewardship milestones was to develop a plan to broaden the pool of reviewers. In response NSF established a Broadening Participation Working Group, which is developing strategies for increasing the diversity of the reviewer pool. For FY 2008 the GPRA working group established a milestone to work on developing the capability to support an internal reviewer database, which would include types and locations of institutions and other demographic indicators. NSF will report on its performance on this milestone in its FY 2010 Budget Request to Congress.

Program officer overload can also diminish the quality of merit review. Although the number of program officers increased from 438 in FY 2006 to 452 in FY 2007, a three percent increase, the number of proposals submitted in those years increased by five percent. In addition, program officers have greater responsibilities in the merit review process because of the increased use of pre-proposals[7] and the larger number of proposals that involve multiple disciplines and directorates. Committees of Visitors still frequently cite the burdens on program officers to conduct merit review.

In response to Congressional concerns about the innovativeness of NSF's merit review processes, in May 2007 the NSB issued a report entitled *Enhancing Support of Transformative Research at the National Science Foundation,* with several recommendations, including development of a clear definition of "transformative research" and a Foundation-wide Transformative Research Initiative (TRI) to incorporate TRI into NSF's core values. NSF has followed up by surveying proposers about transformational research, revising a merit review criterion to highlight the importance of potentially transformative concepts, forming an agency-wide working group to advise the NSF Director and Deputy Director on how NSF can solicit, review, and track potentially transformative research (PTR), developing an operational definition of transformative research, and creating funding mechanisms to support exploratory research.

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[7] In 2004 NSF received 2,310 preliminary proposals, whereas in 2007 it received 2,842, a 23 percent increase in four years.

Specifically, NSF is developing Early-concept Grants for Exploratory Research (EAGERs), which will support untested but potentially transformative research. By the end of calendar year 2008 NSF plans to implement EAGER, provide training modules for NSF program officers on best practices for stimulating PTR, and institute tracking mechanisms to measure the success of PTR efforts. If NSF does not adequately invest in transformative research, it risks increased Congressional scrutiny because Congress believes American competitiveness requires cutting-edge scientific and engineering research.

Merit review is likely to receive continued attention because the 50 percent increase in proposals between 2000 and 2007 has resulted in significantly lower funding rates (33 percent in FY 2000 and 26 percent in FY 2006). As such, increasing numbers of unsuccessful researchers may question the fairness of the process. Adequately addressing concerns about merit review is critical to ensuring that Congress, the science and engineering communities, and the general public have confidence in this "cornerstone" of NSF's work and the Foundation's ability to independently select high quality, innovative projects.

Business, Financial, and Policy Review

NSF's Grant General Conditions place full responsibility for the conduct of an NSF award and for adherence to the award terms and conditions on the awardee institution. Therefore, before making an award NSF must ensure that these institutions have adequate financial management and administrative systems to safeguard Federal funds. At NSF, the grants official is responsible for conducting such a preaward review.

If grants officers have concerns about a prospective awardee's capability to account for its award(s), they refer their concerns to the NSF Cost Analysis and Audit Resolution (CAAR) Branch to perform preaward financial and business reviews. In addition, awardees new to NSF are required to complete and provide a "*Financial Management Systems Questionnaire*." One of the limitations of this questionnaire is that it is an unverified self-assessment. For example, awardees may report that they have accounting systems that segregate NSF award costs from other costs when they do not. NSF needs to ensure that the information it obtains about prospective awardees is sufficient, accurate, and complete to prevent financial mismanagement before taxpayer funds are at risk.

Financial audit reports performed under OMB Circular A-133 are available on almost every NSF-funded institution. In addition, audits conducted by NSF OIG or the Government Accountability Office (GAO) may be available. These audits can assist the grants officer in making funding decisions by identifying accounting and grant administration problems. However, to the extent NSF does not incorporate prior audit findings into its preaward reviews, it limits the scope of its assessments and risks funding awardees that may not have the ability to manage Federal funds.

To address risks to NSF at the preaward stage the following audits will discuss preaward issues as part of their overall programmatic reviews.

Program Area	Assignment	Focus
Preaward		**Performance**
Foundation Wide	Audit of Large Facility Management Agreements*	Continuing series of audits to determine whether the terms and conditions included in NSF's cooperative agreements for the management and operation of its large facility projects are sufficient for NSF to provide stewardship over its programs and assets.
Foundation Wide	Audit of NSF's Financial and Programmatic Oversight of Center Programs*	Series of audits to examine how NSF assesses the programmatic and financial information it receives from projects funded by its seven research center programs and how NSF uses this information to monitor and oversee these programs.
Foundation Wide	Audit of NSF's Preaward Financial Capability Assessments	Audit will determine whether NSF has adequate policies and procedures for assessing the financial capabilities of a grantee, prior to making the award.
Office of Polar Programs	Preaward audits of offerors' proposals for the Antarctic Support Contract	Subject to funds provided by NSF, preaward audits of firms with proposals in the competitive range will determine the adequacy of the firms' proposed costs, cost accounting disclosure statements, and accounting systems.

*Represents on-going work.

2. Active Award Phase

Once grants, cooperative agreements, and contracts are awarded, it is important that NSF properly manage them. While recipients of NSF funds are responsible for overseeing programmatic and financial performance, NSF needs to oversee and monitor how well recipients fulfill this responsibility. NSF must ensure that award funds lead to the results expected when the award was made and are used for intended purposes in accordance with laws and regulations. As such, NSF needs to ensure programmatic results through performance monitoring and financial and administrative compliance through post-award monitoring. NSF also needs to ensure that primary recipients effectively monitor the programmatic performance and financial and administrative compliance of their subrecipients. The risks to NSF from the inadequate monitoring of program results during the active-award phase include suboptimal research results, missed opportunities to fund other research or educational opportunities that might have been more productive, and provision of deliverables at a lower quality than expected. The risks to NSF from the inadequate monitoring of financial and administrative compliance include erroneous payments and undetected misuse of taxpayer funds or fraud.

Monitoring Programmatic Performance of Active Awards

NSF places the responsibility to review the programmatic progress of on-going awards on program officers. Accordingly, to execute this function effectively, program officers need adequate time, written guidance, appropriate training, effective monitoring tools, and adequate travel funds for on-site visits. Weaknesses in any of these areas could result in suboptimal programmatic performance.

NSF acknowledges that program officers have heavy workloads. Between 1997 and 2006 the number of proposals submitted to the Computer and Information Science and Engineering Directorate tripled and the number to Social, Behavioral and Economic Sciences and Engineering Directorates nearly doubled. Similarly, the number of proposals in the Biological Sciences, Mathematical and Physical Sciences, and Geosciences Directorates increased by 50 percent, 40 percent, and 15 percent respectively. The program officer workload also increased due to the rising number of interdisciplinary and cross-directorate awards and the increasing number of programmatic tasks they are asked to perform. In addition, because program officers' primary responsibility is proposal review and award selection, they have less time to manage on-going awards.

To assist new program officers, NSF provides guidance on its web site but the program-management links on the site are out-of-date. Also, NSF is currently developing *A Guide for NSF Managers* so we are not yet able to determine the adequacy of its guidance on program management. The training NSF provides to new program staff includes Project Management Seminars, a checklist for new program officers with internet links to program-management sites, and voluntary classes in project management provided by an external vendor. However, in general, the training NSF offers to program

staff is generic (e.g., project management) or focuses on business processes, such as proposal and award processing, not on the programmatic management of on-going NSF projects. NSF's training task is made more difficult because of constant turnover: 52 percent of program officers are non-permanent or visiting personnel (2007).

Some of the tools needed to effectively manage existing portfolios are not always available to program officers. For example, a recent OIG audit showed that over the five-year period between May 1, 1999 and May 31, 2004, more than 45,000 or 42 percent of required annual project reports on NSF awards had not been submitted. Further, the FY 2007 Financial Statement Audit reported that of 43 sampled awards requiring annual progress reports 31, or 72 percent, were submitted from 17 to 283 days late. If program officers do not have timely annual progress reports, they cannot adequately assess project performance or initiate timely corrective action when progress does not meet expectations. Further, the monitoring process at NSF is divided between program staff and grants administrators. As a result, program staff may not have sufficient financial information to make informed programmatic decisions.

Conducting on-site visits at awardee institutions is critical in overseeing NSF projects. Without sufficient travel funds for program officers to perform these site visits, NSF has less assurance that project goals are being met. In its 2009 Budget Request to Congress NSF requested $10.9 million for travel, 97 percent more than its FY 2007 actual travel expenditures.[8] It stated that additional travel funds would allow NSF to increase oversight of existing awards, "as recommended by the agency's Inspector General."[9] In addition, the FY 2009 request for Intergovernmental Personnel Act (IPA) travel was $4.02 million, 24 percent more than actual FY 2007 IPA travel expenses.[10] However, it was unclear what portions of these travel requests were budgeted for programmatic site visits by program officers.

Members of the Government Performance and Results Act (GPRA) Advisory Group at its June 2008 meeting questioned the adequacy of travel funds for program officers to make site visits. One committee member opined that it was "appalling" that NSF did not have enough money to enable program officers to visit awardees and that he knew of a program officer who used her own funds and vacation time to visit an awardee. His conclusion: "You get what you inspect, not what you expect."[11]

Without adequate time, guidance, training, tools, and travel funds program officers are not able to fully evaluate the status of NSF-funded projects or detect problems with project progress or performance on an award in time to ensure that planned program goals are met before the expiration of an award.

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[8] National Science Foundation, *FY 2009 Budget Request to Congress*, February 4, 2008, Agency Operations and Award Management (AOAM), p. 4.

[9] *FY 2009 Budget Request to Congress*, February 4, 2008, AOAM, p. 6.

[10] *FY 2009 Budget Request to Congress*, Stewardship, p. 3.

[11] An NSF budget official responded that NSF is very aware of the travel issue, that Congress had supported budget increases in the AOAM account in the 2008 budget and in the 2009 budget markups and NSF did not want to sound as if AOAM would never be enough.

Monitoring Financial Status of Active Awards

NSF also faces challenges in monitoring its awardees' compliance with the financial and administrative requirements of the awards. As of March 31, 2008, there were $64 million of unresolved questioned costs reported in 26 audit reports. In addition, the FY 2007 Financial Statement Audit[12] found that NSF needed to improve its monitoring of contracts to ensure that contractors use NSF funds consistent with the objectives of the contract. Without adequate financial monitoring, NSF has less assurance that contract funds are adequately protected from fraud, waste and mismanagement.

In addition, the FY 2007 Management Letter for the Financial Statement Audit found that although NSF had made substantial progress in the post-award administration of its grants and cooperative agreements, NSF needed to establish a protocol to follow up on late project reports and corrective action identified in desk reviews and site visits of grantees. NSF also needed to better document its site visits to grantees and the Business System Reviews, which NSF conducts of its large facilities. Further, recent audits continue to identify problems with primary awardees' management and monitoring of the $6.5 billion or approximately 11 percent of NSF award funds passed through to subawardees,[13] which can lack experience, financial systems, and training to manage the NSF funds passed through to them. Therefore, risk remains for non-compliance with NSF grants requirements and undetected misuse of taxpayer funds.

In order to address risks related to the programmatic and financial performance of awards, the following audits are planned for FY 2009.

Program Area	Assignment	Focus
Active Award		**Performance**
Office of Integrative Activities	Audit of EPSCoR Program	Audit will document risk areas of the EPSCoR program and how the program is addressing these risks.
Office of Polar Programs	Survey of Researchers' Satisfaction with USAP Support Services	Audit will assess how principal investigators evaluated the USAP contractor's performance in providing scientific support services in the Antarctic and may include a survey to determine researchers' level of satisfaction with the services provided.

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[12] The findings of the FY 2008 Financial Statement Audit were not available at the time this Audit Plan was prepared. The FY 2008 Financial Statement Audit Report will be publicly available November 17, 2008.
[13] From FY 1996 through mid-September of FY 2008, NSF funded about $60 billion of awards of which $6.5 billion was for subawards.

Active Awards		Financial/Administrative
Foundation Wide	Audit of labor effort reporting at major universities*	Continuing series of audits to examine major research universities' controls over and compliance with Federal time and effort accounting and reporting requirements.
Foundation Wide	Risk assessments of NSF awards to various universities, non-profits, and for-profit entities	Limited scope reviews will determine the risk to NSF of inadequate grantee systems to safeguard and properly account for NSF funds and comply with Federal and NSF award requirements.
Foundation Wide	Quality Control Review (QCR) of a Single Audit	QCR of a Single Audit of an NSF awardee institution to determine the quality of the audit as a basis for reliance by Federal grant-making agencies.

*Represents on-going work

3. Close-Out Phase

Evaluating the programmatic and financial results of its research programs provides important feedback for NSF. High-level decision makers, such as the NSF Director, the NSB, OMB and Congress, need to know whether NSF funds were properly spent, and which programs are and are not achieving their goals and objectives, in order to make budget allocation decisions.

Assessing Program Performance

Awardees are required to report to NSF on the accomplishments of their projects in final project reports. Special reports unique to a given award may also be required at close-out. NSF program staff are responsible for reviewing these final reports, which are important in deciding whether a particular principal investigator will continue to receive NSF funds.

However, a 2004 OIG audit showed that out of 43,000 required final project reports, over 26,000 reports were either not timely or not submitted at all. Further, contrary to NSF policy that requires the submission of final project reports from principal investigators before they can receive new funding, there were 74 cases in which principal investigators who had not submitted final project reports did receive new NSF funding. In addition, the Management Letter associated with the FY 2007 Financial Statement Audit reported that 7 of 20 sampled (35 percent) final project reports were filed from 27 to 1,386 days late. Nor did the auditors find automated notifications to the grantees or any tracking of these overdue final project reports in an audit log. More recently, NSF's Enterprise Information System shows that as of September 3, 2008, NSF had 2,632 overdue final projects, 215 of them with pending proposals. The average time the reports were overdue was 42.5 months. Without any or timely final project reports, NSF has less assurance that the programmatic goals of its projects have been achieved and risks funding new projects in violation of its policy.

NSF also relies on Committees of Visitors, and more generally, Advisory Committees, to assess how NSF research programs contribute to NSF's mission and goals. NSF needs to ensure the quality and completeness of these assessments and act on reported conclusions and recommendations. Additionally, NSF needs to develop evaluation processes for programs and facilities that include metrics to measure performance results. If NSF does not successfully measure results of its own programs, where feasible, it risks losing funding for programs that do not demonstrate merit, quality, and importance.

Assessing Financial Performance

Grantees are required to report on final cash disbursements during the close-out phase on a Federal Cash Transactions Report (FCTR). However, final disbursement reporting involves inherent risks that NSF needs to manage. OIG audits continue to

demonstrate that NSF grantees, including colleges and universities, vary significantly in their financial management capabilities. For example, audits of time and effort charged to NSF by major research universities have found that the universities cannot always provide adequate evidence that the costs charged to NSF awards are allocable to these awards.

Further, the FCTRs report only summary rather than detailed expenditure information at the budget line-item level, thus making it difficult for program and grants officials to identify expenditures that are not consistent with a project's goals and objectives. Therefore, NSF must have timely and effective procedures to ensure that the grant expenditures reported on the FCTRs are valid, accurate, allowable, and consistent with project goals and objectives. Without timely and effective closeout procedures, there is a risk that awardees may not be in compliance with Federal and NSF grants requirements or that NSF may fail to detect misuse of taxpayer funds.

OIG refers all audit findings and recommendations, including the findings and recommendations of A-133 single audits with findings pertaining to NSF, to the agency for audit resolution and follow-up.   NSF is responsible for implementing the requirements of Revised OMB Circular A-50 on *Audit Followup*. OIG works with NSF staff to resolve internal control, compliance, and questioned cost findings contained in these audits and to ensure awardees implement corrective action plans to address the audit findings.   However, ensuring effective implementation of proposed corrective actions remains challenging, given resource constraints and the number of NSF awardees.

In order to address risks related to the assessment of program and financial performance of awards, the following audits are planned for FY 2009.

Program Area	Assignment	Focus
Close-out		**Performance**
Office of Budget, Finance and Award Management	Audit of NSF's audit resolution process*	Audit will determine whether NSF has adequate procedures and has taken effective corrective action on grantee audit report findings and recommendations.
Closeout		**Financial/Administrative**
Foundation Wide	Desk reviews of Single Audits	Auditors will perform desk reviews of A-133 audit reports on organizations for which NSF has cognizance.

*Represents on-going work.

4. Infrastructure

NSF's award-making and monitoring processes require a highly sophisticated infrastructure consisting of people, systems, information technology, and physical plant and equipment. For example, in order for NSF to conduct panel reviews of proposals, it must have systems in place to allow panelists to travel to NSF, enter the buildings and find their assigned rooms, and even connect their laptops to NSF's computer network. Ongoing award monitoring requires a highly trained staff who travel to awardee locations. All phases of the award process depend upon intricate financial accounting and reporting systems, which in turn depend upon NSF having an advanced and secure information technology substructure. An effective infrastructure is what allows NSF to accomplish its mission. Consequently, this infrastructure must operate well and be protected and maintained.

For audit planning purposes, we have grouped NSF's infrastructure into five broad categories: (1) Financial Management, (2) Human Capital, (3) Physical Plant and Property, (4) Information Technology, and (5) Acquisition.

Financial Management

Improving financial management is a significant issue throughout the Federal Government. The Chief Financial Officers Act of 1990 (CFO Act), as amended, establishes the legal framework for improved Federal financial management. The CFO Act requires agencies to prepare financial statements and the OIG (or an independent public accounting firm selected by the OIG) to audit these statements.

A timely and effective post-award monitoring program for all awards, including grants, cooperative agreements, and contracts, is necessary to accurately report expenditures on NSF's financial statements and to ensure that the awardees are expending their NSF funds in accordance with their award agreements and that they are making adequate progress toward achieving award goals, objectives and targets. To monitor grants and cooperative agreements, NSF promulgated *Standard Operating Guidance,*[14] which specifies baseline and advanced post-award monitoring responsibilities within NSF. OIG continues to assess the adequacy and completeness of the monitoring procedures and the effectiveness of NSF's implementation of its monitoring programs.

Specifically, the FY 2007 Financial Statement Audit reported a significant deficiency in NSF's contract monitoring processes. Inadequate contract monitoring constitutes a serious risk to NSF because in FY 2007 alone NSF expended approximately $551 million on active contracts and interagency agreements. Of that amount $212 million was paid to three contractors through advance payments, including $148 million to the contractor that provides logistical support for the U.S. Antarctic Program. In 2005 and 2006 OIG issued audits of this contractor for the years FY 2000 through 2004 and found internal control weaknesses resulting questioned costs of $56 million.

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[14] *Standard Operating Guidance*, BFA-2008-1 (June 12, 2008).

In addition, the FY 2007 Management Letter for the Financial Statement Audit reported that NSF needed to improve its accounting and financial reporting policies manual and other major program/operations manuals, update them periodically, provide them immediately to applicable staff, and train staff to effectively implement them because inadequate procedures can result in inconsistently recorded transactions. Also, the Management Letter found that NSF needed to reduce the manual processes used in grants accounting to ensure the accounting records are more accurate and timely, and resolve $120 million of accounting differences with its governmental partners.

The Management Letter also reported that NSF needed to improve its grants processes to ensure that NSF a) accepts only proposals with the required certifications; b) consistently documents the merit review process or the justification for not undertaking merit review; c) documents the recommendations and approvals of proposals and the certifications of funds availability to ensure that only approved awards are funded and that there is money to fund them; d) notifies grantees when annual and project reports are late, documents the notification in the award file and follows up when grantees do not file the reports even after notification; e) more adequately describes, documents, and follows up on site visits of grantees, f) improves desk reviews processes to facilitate timely follow-up on corrective actions; g) resolves OIG audit findings in a more timely manner to prevent delays in grantees' implementing corrective action; h) revises the business system review guide to help ensure reviews of NSF's large facilities are issued timely and that reviewers receive adequate guidance on performing and documenting these large facilities reviews; and i) reconciles grant obligations amounts in the NSF awards and financial systems so that staff can rely on the accuracy of information in the award system.

NSF is also responsible for an annual review of its accounting systems and internal controls in accordance with the *Federal Managers Financial Integrity Act* (FMFIA) of 1982. In 2004, in light of the new internal control requirements for publicly-traded organizations in the Sarbanes–Oxley Act of 2002, OMB revised Circular A-123, *Management's Responsibility for Internal Control*, to strengthen requirements for management's assessment of internal controls over financial reporting. Appendix A of the Circular specifically requires the NSF Director to provide a separate assurance statement on the adequacy of controls over financial reporting. Because of the amount of time needed to understand the new requirements and to conduct necessary control testing, NSF requested and OMB granted the agency a three-year period to conduct the necessary control testing underlying the assurance statements. In February 2007 NSF provided OMB with details of its FY 2007 A-123 Implementation Plan. The results of OIG's FY 2008 testing of NSF's Plan are not yet available. OIG audits of NSF's financial statements will continue to monitor NSF's implementation of the revised Circular A-123 requirements.

Human Capital

In 2008 NSF issued *Human Capital Strategic Plan*, which describes its human capital management system and workforce and succession plans. Despite the publication of the new plan, however, on June 30, 2008, NSF received a red score for status and for progress in implementing the human capital portion of the President's Management Agenda. The red score was lower than the yellow score it received in both human capital categories on June 30, 2007. NSF attributes the red score to incompatibility between the criteria used in the rating process and the type of agency NSF is. Specifically, NSF has concluded that the requirement to perform a skill gap assessment for program staff, which would focus on skill gaps around generic competencies rather than the specific competencies NSF uses to hire its scientists and engineers, is inappropriate.

However, the President's Management Agenda for human capital (though not specifically the scorecard) has been codified in 5 C.F.R. part 250, which all agencies will be required to comply with even after the current administration has left office. NSF, like all Federal agencies, will need to have a human capital plan that includes goals and objectives, workforce analysis, performance measures and milestones and an accountability system, including "an annual assessment of agency human capital management progress and results…."[15] Thus, in accordance with 5 C.F.R. part 250, NSF will be required in FY 2009, and annually thereafter, to report to the Office of Personnel Management on its compliance with these regulations.

Guided by NSF's Strategic Plan for FY 2006-2011 and the *Human Capital Strategic Plan*, NSF has developed a comprehensive workforce profile for the agency and is developing two-year staffing plans for each directorate and office. The agency is also continuing to implement an administrative function initiative, which is designed to align the workforce with contemporary technology and business systems, reduce the burden on program staff, provide more effective administrative support for NSF's mission, and enhance the professional development of administrative staff.

NSF is also developing training opportunities for program and administrative staff. The agency is working on an executive development program to help new executives understand their NSF responsibilities quickly and a merit review seminar and a comprehensive program officer development program to continue to improve NSF's programmatic processes. In addition, NSF is continuing to develop a New Employee Welcome Program to help orient all entering staff. NSF is also developing learning maps for administrative functions through the Learning Management System; and based on their success, plans to make learning maps available for other key NSF positions. Further, NSF has established a working group to review the content of its e-business training to help staff better understand how electronic systems can facilitate the accomplishment of NSF's mission.

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[15] 5 C.F.R. part 250.203.

NSF's human capital efforts are designed to address two critical challenges – developing a 21st century workforce and continually attracting top scientists and engineers to come to the agency. If NSF does not successfully meet these challenges, it risks having a suboptimal distribution of skills and/or an insufficient workforce. More fundamentally, if NSF does not attract top researchers and provide them with adequate, appropriate support services, it may not effectively achieve its mission.

Physical Plant and Property

The most visible facets of NSF's infrastructure are its buildings and physical property. Thousands of employees, contractors, and visitors enter NSF's buildings each month and use the physical property contained therein. NSF must ensure that its physical environment is not only adequate to support its needs but is also safe, secure, and in compliance with applicable Federal environmental standards. Real and/or tangible assets in the United States, France, Japan, and China, and in the Antarctic as well as those at research facilities must be protected. NSF must prevent unauthorized acquisition, use, or disposition of its assets.

Physical security for Federal office buildings has been a government-wide concern since the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City, Oklahoma, and has continued following the events of September 11, 2001. In June 1995, the Department of Justice issued a report entitled *Vulnerability Assessment of Federal Facilities*, which designated security levels I through V into which Federal office buildings could be categorized and identified minimum-security standards for each of the five security levels. These standards covered perimeter, entry and interior security, and security planning. Fifty-two minimum standards were established with level I having 18 minimum standards and level V having 39 minimum standards. Examples of minimum standards include lighting with emergency power backup for all buildings (perimeter security); intrusion detection systems for building levels III through V (entry security); visitor control systems for building levels II through V (interior security); and standard armed and unarmed guard qualifications/training requirements in all buildings (security planning). ██

Homeland Security Presidential Initiative (HSPD)-12 requires that all agencies implement a single government-wide standard for "secure and reliable" forms of identification for all employees and for contractors with access to Federal facilities and information technology systems. In FY 2008 NSF made an award for a new Physical Access Control System to read new Federal identity cards and ████████████████ ██████ of he cards staff and contractors. ██████████████████████████ ██████████████████.

To ensure continuity of essential functions in the event of an emergency that prevents working at headquarters, NSF revised its Continuity of Operations Plan (COOP), in April, 2008. On May 7-8, 2008 the Federal Emergency Management Agency conducted a full-scale continuity exercise at NSF. Based on a green, yellow, red rating

system, with green being the best rating, ██.

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The risks to NSF from inadequate security over physical plant and property or inadequate plans and processes for cases when normal operations are disrupted due to emergencies include potential loss of life, bodily harm, destruction of or damage to assets, and disruption of operations, and non-compliance with Federal requirements.

Information Technology

Information technology (IT) is critical to NSF's operations. In its FY 2009 Budget Request to Congress, NSF requested $82 million for IT. The largest component was for applications ($54 million) followed by infrastructure ($23 million) and IT security and privacy ($5 million). For the first time the FY 2009 request for IT applications divided the IT budgets between Agency Operations and Award Management (AOAM) ($19 million) and "Program Related Technology" ($35 million).

The request for IT applications classified as AOAM was for a new time and attendance system, an electronic Official Personnel Folder, additions to a Human Resource Information System, and maintenance of NSF's existing Financial Accounting and travel-management systems. The request for IT applications classified as "Program Related Technology" was for projects such as Research.gov, e-jacket, FastLane, and Reviewer Management.

Classifying Research.gov as "Program Related Technology" implies that this initiative supports NSF programs. Although NSF is a prime user, Reseach.gov, also provides fee-based Grants Management Line of Business (GMLOB) Consortium services to multiple Federal agencies. The inclusion of Research.gov in program-related budgets for the first time highlights its opportunity cost. Specifically, this technology utilizes

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[16] Currently only ████████ of NSF employees have telework agreements and not all have SecurID tokens, which are required to access NSF computer systems from remote locations. Specifically, as of September 18,2008, ██.

program resources that might otherwise fund NSF proposals. The tradeoff is particularly notable when NSF's funding rate is low, as it currently is. In 2007 the funding rate was 26 percent, a decrease of 21 percentage points from the 2000 rate. The receipt of fees from other agencies for Research.gov services raises additional issues, such as whether the revenues will fully offset the costs NSF incurs in providing the services and more generally, how NSF will utilize these revenues.

The $23 million request for infrastructure (all in AOAM) includes a network platform for business applications, more modern e-mail and archiving systems, additional remote access capabilities, and enterprise architecture efforts. The $5 million IT security and privacy request is divided between AOAM ($3 million) and "Program Related Technology" ($2 million). The AOAM portion includes requests for network and application security, security control testing and tools, remediation and intrusion detection, automated tools to assess vulnerability, and controls to protect sensitive information. The "Program Related Technology" portion requests funds to secure applications and protect sensitive *program* information.

The Federal Information Security Management Act (FISMA) of 2002 requires an annual independent evaluation of computer security at Federal agencies.

In June 2006, in the wake of losses of sensitive personal information at Federal agencies, such as the Department of Veteran Affairs, the OMB issued Memorandum M-06-16, which instructed all agencies to utilize a security checklist provided by the National Institute of Standards and Technology to protect remote information and to take additional actions, including encrypting all sensitive agency information on mobile devices and verifying that data extracts from databases containing sensitive information have been erased within 90 days unless their use is still required. In May 2007, OMB issued Memorandum M-07-16 to require Federal agencies to more specifically protect personally identifiable information, such as name and social security number, and to develop and implement a breach-notification policy. This Memorandum also restated the security requirements that were included in M-06-16. In FY 2008, the Financial Statement auditor rated NSF's implementation of the privacy-related security provisions in M-07-16 as

NSF acknowledges that it is still in the initial phases of erasing all

██ After NSF addresses OMB's IT security requirements, it plans to focus on these additional risks.

Telework increases the need for IT security and training. As of September 2008, ███████████████ NSF employees had telework agreements. To reduce security risks, prior to starting to telework, employees are required to complete a specially designed telework course, which includes a security component. However, according to the General Services Administration,[17] ██ ████████████████████████████████████.

An additional IT risk involves the misuse of NSF computers. To reduce that possibility, NSF recently blocked access to inappropriate sites on the Internet. Further, on September 25, 2008 NSF issued a new policy on personal use of NSF Technology and Communications Resources. NSF needs to ensure that this policy is being implemented.

Acquisition

Acquisition continues to be a significant process supporting all of NSF's functions, as well as its overall mission. In FY 2007, NSF obligated approximately $378 million for products and services from outside contractors[18] including an estimated $237 million obligated through advance payments to three contractors. Through contracts, NSF purchases IT services and software, statistical services for specialized reports, and basic business equipment such as desks, computers, and office supplies.

In FY 2009 NSF will be preparing for the competition of the USAP Support Contract. The current contract expires March 31, 2010 and NSF expects to make a contract award October 1, 2009.[19] The selected contractor will provide operations, maintenance, logistics, and support services for USAP. This contract involves significant risks to NSF because of the large dollar amount involved, its duration, prior findings in audits of the current contract, and the high profile of the USAP program. The present contractor, Raytheon Polar Services Corporation (RPSC) incurred $1.2 billion of expenses in the eight-year period from June 19, 2000 through June 30, 2008. A recent OIG audit of RPSC found that it could improve its management of operations affecting the health and safety of personnel who work at USAP facilities. Other OIG audits have questioned ██████████ of costs claimed on the USAP contract from 2000 though 2004 and have found an additional ██████████ of potential increased costs from 2005-2010 because RPSC changed its disclosed accounting practices. To date only ██████████ of costs questioned on OIG's audits of RPSC have been resolved.

USAP is a highly visible program both to Congress and the public at large. Members of Congress frequently visit USAP facilities in Antarctica and are keenly

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[17] General Services Administration, *Telework Technology Cost Study* (May 2006), p. 1

[18] This number does not include approximately $158 million in Interagency Agreements.

[19] Expected milestones in FY 2009 prior to the issuance of the contract include release of the final request for proposals (October 2008), site visits in Antarctica (October-December, 2008), proposal receipt (February 2009), evaluations and negotiations (March-August 2009).

interested in NSF's Antarctic program. Students and teachers have access to a variety of Antarctic resources, such as *Via Antarctica,* a series of six podcasts exploring the Drake Passage, and *The Antarctic Sun*, an electronic paper published during the austral summer at McMurdo Station for USAP about activities on and under the ice. Events commemorating International Polar Year 2007-2008 have raised the profile of USAP even more.

Because of the risks associated with the USAP contract due to the amount of Federal funds involved, the duration of the contract, findings in prior OIG audits, and the high visibility of the USAP program, preaward audits of some subset of proposals submitted for the Antarctic Support Contract should be a high priority for NSF to ensure the reliability of the proposed costs and the integrity of the proposers' accounting and billing systems.

Acquisition also involves internal purchases with their own inherent risks. For example, the use of credit cards decentralizes an agency's purchasing function and gives purchasing authority to a greater number of staff. Decentralization also increases the risks of unauthorized purchases, excessive payments, or sub-optimal performance. In a given year, NSF cardholders make thousands of purchases worth millions of dollars with government purchase cards. Additionally, as more purchases are made electronically, the risks increase and NSF must address issues such as security, access, and authentication to ensure the integrity of the acquisition process.

In order to address risks related to infrastructure, the following audits are planned for FY 2009.

Program Area	Assignment	Focus
Infrastructure		**Financial/Administrative**
Foundation Wide	Oversight of FY 2009 CFO Audit	Oversight of the audit of NSF's agency-wide financial statements, which will be performed by an independent public accounting firm under contract to the OIG. The audit is mandated under the Chief Financial Officers Act of 1990.
Foundation Wide	FY 2009 FISMA Review and FISCAM Audit	Annual evaluation of NSF's information system security program and practices as required by the Federal Information Security Management Act of 2002 (FISMA). Evaluation performed as part of the FY 2009 CFO Audit.
Foundation-Wide	Survey of Interagency Agreements	Audit will assess NSF's use, implementation and oversight of Interagency Agreements.