

## Congressional Testimony

In May 2012, the Inspector General testified before the House Science Research and Science Education Subcommittee at a hearing titled, “Ensuring the Best Stewardship of American Taxpayer Dollars at the National Science Foundation.” The Inspector General’s testimony focused on the key issues facing effective stewardship of taxpayer dollars at NSF and the areas the OIG has identified as being at most risk for fraud, waste, abuse and mismanagement.

Since NSF’s primary mission activity is accomplished through funding external awardees, the success of the agency’s overall mission and the achievement of its goals are largely dependent on effective grant and contract administration. OIG audits of NSF’s operations have found that NSF needs to continue to improve its grant management activities, including the oversight of awardees’ financial accountability, programmatic performance, and compliance with applicable federal and NSF requirements.

With regard to contract administration, adequate monitoring of cost reimbursement contracts remains a significant challenge for NSF, and we have focused on the agency’s ability to manage these contracts. Monitoring of cost reimbursement contracts was identified as a significant deficiency in NSF’s FY 2009 and FY 2010 financial statement audits. While the finding fell to a management letter comment in the FY 2011 audit, challenges remain.

Another area of ongoing concern is NSF’s management and use of contingencies in budgets for its large Major Research Equipment and Facilities Construction projects. Audits of the proposed budgets of three of NSF’s large facility construction projects — the Ocean Observatories Initiative (OOI), the Advanced Technology Solar Telescope (ATST), and the National Ecological Observatory Network (NEON) disclosed significant problems with the proposed use and management of contingency funds because the applicable OMB cost principles do not allow “[c]ontributions to a contingency reserve or any similar provision made for events the occurrence of which *cannot be foretold with certainty* as to time, intensity, or with an assurance of their happening.”

For example, the proposed \$386 million budget in OOI contained a total of \$88 million in unallowable contingency funds because there was a lack of evidence to support that the amounts budgeted were for events that were consistent with the cost principle. Follow-up work failed to surface evidence to support the contingency amounts, confirming the original finding that the \$88 million proposed is unallowable. Similar reviews of the budget proposals for the ATST and NEON projects identified an additional \$136 million in unallowable contingency costs.

Identifying funds needed for uncertainties that arise during the conduct of complex projects is an important part of project management; however, there are significant risks associated with NSF’s approach of awarding all

contingency funds to awardees, without regard to whether they are consistent with the cost principle and supported by verifiable data. Simply stated, placing unallowable contingency funds into awardees' hands is not prudent financial management.

The Inspector General's testimony also addressed the OIG's work examining how NSF spends money *internally* for its own operations and activities. In this vein, the OIG has examined NSF's expenditures for wireless plans and devices, refreshments for panelists, and the Independent Research/Development travel program. The agency has been receptive to our recommendations and, among other things, has taken actions to enhance the cost-effectiveness and efficiency of its purchasing practices.

Finally, the Inspector General noted some of the OIG's investigative results including investigative recoveries for fines, restitutions, and other actions totaling \$21.6 million for the past three years. The OIG has also directed significant investigative attention on fraud in the Small Business Innovation Research program, and since 2009 our SBIR cases have resulted in over \$1.2 million in restitution, funds returned to NSF, and funds put to better use.

The OIG's work reflects a sustained commitment to helping NSF be an effective steward of taxpayer dollars, and benefits from the support of NSF management across the Foundation.

## Outreach

OIG staff have engaged in numerous proactive activities to address programmatic and financial responsibilities of NSF awardees, and to educate awardees about fraud recognition and prevention, research misconduct, and the responsible conduct of research. Our Outreach program remains an essential component of our mission to prevent and detect fraud, waste, and abuse and to promote economy, efficiency, and effectiveness in NSF programs and operations.

The Inspector General continues to lead the Council of Inspectors General on Integrity and Efficiency (CIGIE) Grant Reform Initiatives Working Group to ensure accountability for financial assistance funds and to maintain robust tools by which OIGs oversee the use of these funds. In addition, the Inspector General continues to lead the SBIR Working Group. Since its inception in 2009, this group has worked toward establishing strong, uniform certifications, modeled on those at NSF that can be used by all SBIR/STTR funding agencies as an effective weapon against fraud in these programs, and as a means to improve the government's ability to prosecute such fraud when it does occur. The Working Group's effort culminated in revisions to the Small Business Administration's SBIR/STTR policy directives, which include requirements for such certifications. SBA posted the revised directives in the Federal Register on August 6, 2012, and the comment period ended on October 5, 2012.

With the Federal Housing Finance Agency Inspector General, the NSF Inspector General also continues to lead a Suspension and Debarment (S&D) Working Group under the auspices of the CIGIE Investigations Committee. Through the Working Group, we continue our efforts to increase understanding and effective use of S&D throughout the community in order to better protect government funds against fraud, waste, and abuse.

The NSF Inspector General participated in a panel discussion at the national conference of the Association of College and University Auditors and emphasized the essential role auditors — both inside the government and at universities play — in the identification and prevention of waste and fraud involving federal grant funds.

Recognized throughout the research community for our efforts to identify and prevent waste and fraud, OIG staff participated in meetings, made presentations, and provided instruction in numerous forums. In the past six months, we gave presentations before, among others, the Society of Research Administrators International; the Association of Government Accountants; the CIGIE/GAO Financial Statement Audit Conference; the Association of Certified Fraud Examiners, and the Misconduct in Research Working Group. We also participated in meetings of the National Single Audit Coordinators, Federal Audit Executive Council, and the Financial Statement Audit Network. We provided research misconduct briefings at four universities and provided instructors to FLETC for grant fraud-related courses and programs.



## **CHALLENGE:** *Establishing Accountability over Large Cooperative Agreements*

**Overview:** NSF currently has 685 Cooperative Agreements (CAs), totaling nearly \$11 billion; thirty-eight of these CAs are for over \$50 million each and comprise \$5.5 billion of the total number of CAs. A federal agency can use a cooperative agreement when entering into a relationship with a recipient when the primary purpose of the relationship is to transfer a thing of value to carry out a public purpose of support or stimulation, and substantial involvement between the federal agency and the recipient when carrying out the agreement is expected.<sup>25</sup>

A Cooperative Agreement is not subject to the same rigor and reporting mechanisms as a contract, and does not have the same level of transparency over transactions as a contract. Among other things, NSF uses CAs to construct and fund the operations and maintenance of large facility projects. Since NSF has chosen to use CAs for the construction, operation, and maintenance of high-risk, high-dollar large facility projects, it is imperative that it exercise strong cost surveillance controls over the lifecycle of such projects.

Over the last two years, audits of the proposed construction budgets for three of these non-competitive proposals valued at \$1.1 billion found approximately \$305 million (almost 28 percent), in unallowable or unsupported costs. All three of the awardees' proposals had significant unallowable contingency costs, and two proposals were initially found unacceptable for audit. After much work, one of these proposals was audited, and the auditors issued an adverse opinion, finding that the proposal did not form an acceptable basis for the negotiation of a fair and reasonable price. The third proposal, which was submitted by an awardee found to have an inadequate accounting system, remains unaudited.

Inadequate proposals which contain large amounts of unallowable and unsupported costs undermine NSF's ability to serve as a proper steward of federal funds. Consequently, there are serious questions about NSF's accountability over the \$11 billion in cooperative agreements in its portfolio.

We have also identified serious weaknesses in NSF's post-award monitoring processes for high-risk projects that compound our concern that unallowable costs could be charged to awards, thereby placing federal funds awarded under CAs at further risk. NSF does not routinely obtain incurred cost submissions or audits of costs claimed on its largest CAs to determine the allowability of direct and indirect costs claimed on federal awards. While not required by law or regulation, such submissions and audits are essential tools for ensuring accountability in high-risk, high-dollar projects. In their absence, unallowable costs charged to these awards may go undetected because NSF lacks sufficient visibility over incurred costs. The failure to regularly obtain incurred cost submissions also has a negative impact on our office's ability to conduct incurred cost audits.

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<sup>25</sup> 31 United States Code §3605.

**Challenge for the Agency:** It is an ongoing challenge for NSF to establish accountability for the billions of federal funds in its large cooperative agreements. Proper accountability requires cost surveillance measures that include strong pre- and post- award monitoring, especially for high-risk, high dollar facility projects. NSF does not require pre-award audits of awardees' proposals for such projects to ensure that they have reasonable budgets and adequate accounting systems in place before the award is made. Further, NSF does not require the use of OMB's Form 424C (or an equivalent form), for submitting proposals to provide greater visibility and segregate allowable and unallowable proposed costs.

Similarly, NSF does not have a strong post-award monitoring process. NSF does not routinely obtain awardees' incurred cost submissions or initiate audits of costs claimed on its largest CAs, and therefore lacks detailed information necessary to properly oversee these expenses. As a result, there is an increased risk of unallowable costs being charged to these awards and going undetected.

Another ongoing challenge for NSF is the management and oversight of contingency costs in proposed budgets for its large construction projects. In total, audits have identified more than \$224.6 million in unallowable contingency costs out of total proposed costs of over \$1.1 billion. NSF's cooperative agreement award and monitoring process was also cited as a significant deficiency in the FY 2011 financial statement audit.

Without improving end-to-end processes over CA monitoring from the proposal stage to award close-out, NSF cannot affirm that it has received reasonable value for taxpayer dollar and that those dollars are not misused. We recommended that NSF strengthen cost surveillance policies and procedures to ensure adequate stewardship over federal funds.

**OIG's Assessment of the Agency's Progress:** During the past year, the agency has participated in ongoing discussions with OIG regarding the resolution of audit findings and recommendations related to NSF's management of its large cooperative agreements. NSF has agreed to require the use of Form 424C or an equivalent and has stated that it plans to re-examine its procedures related to requiring support for contingency estimates in budget proposals.

### **CHALLENGE: *Improving Grant Administration***

**Overview:** NSF receives approximately 51,600 proposals each year for research, education and training projects. Each year the Foundation funds approximately 11,000 new awards, and as of June 2012, it had a portfolio of over 43,000 active awards totaling \$27 billion. In light of the fact that most of these awards are made as grants, it is vital that NSF's grant management processes ensure the most stringent level of accountability.

**Challenge for the Agency:** Oversight and management of awards that is sufficient to safeguard federal funds invested in scientific research has been an ongoing challenge for NSF. The FY 2011 financial statement audit noted

several areas of concern about SF's processes for awarding and administering grants, including a lack of follow-up to determine whether awardees acted to correct problems identified in desk reviews and delays in resolving open audit recommendations. Insufficient sub-recipient monitoring, which has led to inadequately supported and unallowable costs being charged to awards, has also been a challenge for NSF.

Additionally, in recent years, budgetary constraints have placed increased pressure on NSF's ability to maintain strong oversight, as the Foundation has had fewer staff than staffing assessments indicated were needed. For example, NSF planned to conduct 30 Award Monitoring and Business Assistance Program (AMBAP) visits in FY 2011, but completed only 26 visits. This situation underscores NSF's challenge to properly make and oversee awards.

**OIG's Assessment of the Agency's Progress:** NSF's Award Monitoring and Business Assistance Program was designed in part to provide advanced monitoring to ensure that awardee institutions have adequate policies and systems to manage their NSF awards. NSF reported that it completed its annual risk assessment to prioritize AMBAP site visits in FY 2012 and that it completed the 30 AMBAPs that it had planned to conduct.

As part of its efforts to innovate and improve its oversight activities, NSF conducted a virtual site visit pilot program as an enhancement to the AMBAP program. NSF stated that benefits of the program included reduction in travel costs, better use of resources, and more time for documentation review. NSF indicated that it plans to calculate the savings associated with the pilots it conducted; formally solicit awardee feedback; and, develop training on using technology associated with virtual site visits. NSF has also reported that it has started to implement its new financial system and has staffed the project management office that will oversee the system's implementation.

In addition, in response to our audit of NSF's staffing needs for management and oversight of grants, which found among other things, that not having sufficient staffing resulted in NSF reducing the number of planned AMBAP site visits. NSF plans to include the identification and evaluation of opportunities to streamline its operations into its annual workforce planning process to ensure sound financial management and oversight of awardees.

### **CHALLENGE: *Strengthening Contract Administration***

**Overview:** For two consecutive years (2009-2010), the monitoring of cost reimbursement contracts was identified as a significant deficiency in NSF's annual financial statement audit. During this past year, the finding was reduced to a management letter comment as a result of actions the agency has taken to correct the situation. Cost reimbursement (CR) contracts are inherently risky because the government assumes much of the risk that poor performance on the part of the contractor will result in cost overruns. In FY 2012, NSF obligated \$402 million for all contracts. Of that amount, \$282 million were for CR contracts, including \$123 million in advance payments issued before work was done.



But concerns with contract administration remain, especially with regard to the U.S. Antarctic Program (USAP). As NSF transitions to a new contractor, significant issues with its prior contract have yet to be resolved. In particular, NSF has not had an adequate and compliant CAS Disclosure Statement (DS-1) for its USAP contract with Raytheon since 2005. In May, NSF decided to halt an audit by DCAA to determine the adequacy of Raytheon's DS-1, a decision that is likely to further delay closing out this contract. An approved DS-1 is required by Federal Acquisition Regulations and is needed to complete close-out audits and final settlement of costs on the contract. Without an approved DS-1, NSF lacks an agreement with Raytheon on the accounting practices to be used in closing out the contract, such as distinguishing between direct and indirect costs. Such issues are typically settled before a contract begins or at an early stage.

The FY 2011 management letter presented seven recommendations for strengthening NSF's contract monitoring practices, reemphasizing that more attention must be paid to basic monitoring procedures such as the review of incurred cost audits, cost disclosure statements, and incurred cost submissions to ensure the contractor's compliance with contract terms and federal regulations. Contracting weaknesses, though mitigated during the past year, continued to come to light as the agency awarded its largest contract, which provides logistical support to the USAP over 13 years. Following several delays in the procurement process, the award was finally made in December 2011.

**Challenge for the Agency:** NSF's challenge is to correct the deficiencies in contract administration that have been identified by NSF's financial statement audit, to increase the use of firm-fixed price type contracts, and to continue to improve the effectiveness of its contracting policies, practices and professionals. In their most recent management letter, the financial statement auditors recommended that NSF fully implement its cost surveillance oversight procedures and continue improving its controls over cost reimbursement contracts. NSF management must continue to implement its remaining planned corrective actions to ensure that it maintains adequate control over CR contracts.

Cost incurred audits necessary to determine compliance with financial terms and conditions of the contract are critical to meeting this challenge. For large contracts subject to Cost Accounting Standards (CAS), a cost incurred audit can only be effectively performed with an approved CAS disclosure statement and incurred cost submissions. The agency is still in the process of obtaining audits of millions of dollars in costs incurred from 2008 – 2012 by the former USAP contractor and several other of its largest contracts. Incurred cost audits of all open years and of the final close-out voucher are needed. NSF also needs to decide which DS-1 the auditors should use as criteria in performing these audits. An important objective of the final audits should be to ensure the recovery of \$10.4 million in unallowable costs that previous audits have determined the contractor owes NSF.

As a matter of policy, NSF should obtain disclosure statements, incurred cost submissions and incurred cost audits of its largest contracts on a regular basis and promptly resolve any questioned costs that arise. Regarding its



largest contracts, NSF must also review and verify the disclosure statement to determine if it is adequate and compliant with CAS, prior to or shortly after the award is made.

**OIG's Assessment of the Agency's Progress:** In FY 2012, NSF made progress in addressing some of the problems in its management of contracts. NSF has taken steps to strengthen its guidance, and is receiving some audits of costs incurred. However, the most recent management letter indicates that work remains to be done to strengthen NSF's contract monitoring and cost surveillance procedures, particularly as it relates to CR contracts. Although the Contracting Manual was updated to require cost incurred submissions every 6 months from its largest contractors, in FY 2011 two of three contractors transmitted the submissions late and the third did not submit one at all. The agency must continue its focus on obtaining adequate disclosure statements and obtaining and reviewing or auditing incurred cost submissions on its largest contracts. The agency also should continue to identify cost reimbursement and advance payment contracts for audits of costs incurred based on materiality and risk, and to fund those audits to verify the validity of costs.

### **CHALLENGE: *Ensuring Proper Stewardship of ARRA Funds***

**Overview:** The American Recovery and Reinvestment Act (ARRA) provided \$3 billion for the National Science Foundation (NSF) as an investment in research that would produce economic benefits and growth. NSF staff worked diligently to obligate and administer the reporting requirements associated with over 4,000 ARRA-funded awards. NSF awardees have registered a 99.5 percent, or higher, compliance rate each quarter with ARRA's enhanced reporting requirements.

On September 15, 2011, OMB issued a memorandum to the heads of federal agencies urging them to spend remaining ARRA funds, and to recapture discretionary grant funds not spent by the end of FY 2013 "to the fullest extent of the law." The memo further explained that federal agencies could request waivers from the end of FY2013 deadline for discretionary grants in extenuating circumstances. According to NSF, as of August 2012, just \$2.1 billion, or 70 percent, of NSF's ARRA funds have been expended; and 474 awards were either less than 50 percent complete or had not started at all. NSF programs have requested waivers for 449 ARRA awards. As of October 1, 2012 OMB has not made any waiver decisions and has extended the deadline for filing final waiver requests through November 2012.

**Challenge for the Agency:** The challenge for the agency remains to: 1) assure that ARRA funds are not subject to fraud, waste and abuse; and 2) continue to press those awardees that are able to accelerate spending within the next year to do so. As ARRA awardees spend down their funds, NSF program managers and administrative staff must be attentive to indications of fraud, waste and abuse, and intervene when appropriate, especially in situations when the deadline to expend funds is accelerated. ARRA funds were intended to provide an immediate stimulus to the economy, and a significant number of NSF's ARRA awards will not expire until after 2013. The agency should take all actions necessary to ensure that those funds are spent as prudently and quickly as possible.

**OIG's Assessment of the Agency's Progress:** NSF indicates that current ARRA expenditures do not yet reflect the impact of its effort to accelerate spending, and that the rate of completed ARRA awards will increase significantly in the 4<sup>th</sup> quarter of FY 2012, with 1,228 awards set to expire. The agency also continues to actively monitor recipient reporting and the spending of grantees. It has enforced its burn rate grant condition requiring recipients to expend ARRA funds within one year, and implemented report review logic to identify under- or over-reporting of jobs created by ARRA.

The agency has also worked cooperatively with OIG to identify potential occurrences of fraud, waste and abuse associated with ARRA funds. Due to their high visibility, NSF assigns a higher risk adjusted rating to ARRA awards than others and provides them additional oversight. Currently, OIG has 13 active investigations related to Recovery Act funds underway.

### ***CHALLENGE: Management of the U.S. Antarctic Program***

**Overview:** Antarctica is the coldest, driest, windiest, most remote continent on earth. The weather changes frequently and abruptly; temperature drops of as much as 65 degrees F in 12 minutes have been recorded. Since 1956, Americans have been studying the Antarctic and conducting research to better understand Antarctica and its effects on global processes such as climate.

NSF funds and manages the U.S. Antarctic Program (USAP) through its Office of Polar Programs. The program has three year-round research stations—McMurdo, Amundsen-Scott South Pole, and Palmer. The population at McMurdo, the largest station, ranges from approximately 1,100 contractors, staff, and researchers in the summer months from early October through February, to about 265 during the winter. The population at Amundsen, the second largest station, is around 250 in summer and about 50 in the winter. Palmer is the smallest permanent station housing between 15 to 45 people. There are also more than 50 temporary field sites during the summer months. In addition, the program operates two research vessels.

The extreme Antarctic environment and the short period of time during which access to the continent is possible strains the effort to provide logistical support for the USAP. Logistical support activities include communications, health and safety programs, and vehicle and equipment maintenance.

NSF relies on heavy icebreakers operated by the Coast Guard to resupply its Antarctic research stations. Currently, none of those icebreakers is operational and NSF has contracted with a Russian company for an icebreaker for the 2012 and 2013 seasons.

In response to Administration requests, two independent reviews have recently been conducted on the USAP. The first review, headed by the National Research Council, focused on future scientific research and the second conducted by a Blue Ribbon Panel, focused on logistical and infrastructure needs.

**Challenge for the Agency:** Establishing and maintaining a world-class scientific research program in Antarctica's remote and harsh environment is a formidable logistical challenge. In terms of person-days in Antarctica, the logistics effort represents nine times the number devoted to research activity. The Blue Ribbon Panel report issued in July 2012 stated that the USAP logistics system is badly in need of repair and that failure to upgrade the system will increase the cost of logistics until these costs squeeze out funding for science.

The report identified eight major logistical issues: capital budgeting, alternatives to McMurdo station, icebreakers, transportation on the continent, a hard surface ice runway at the South Pole, energy, communications, and safety and health. In addition, the panel found a number of single point failure risks--circumstances in which the failure of one element of a system would render the entire system incapable of performing its function. Examples of these risks include icebreaking capacity, broadband communications, and fire suppression systems requiring electric power.

Some of these issues are longstanding concerns. For example, an August 2005 report by an OPP advisory committee stated that the resupply system was inherently risky due to a single point of failure condition created by the increasing deterioration of the polar icebreakers. The 2005 report was conducted at the request of the OPP Director after OPP initiated an internal preliminary study in 2004 of several resupply alternatives related primarily to the McMurdo and South Pole stations. The report recommended that NSF further investigate the means and costs associated with the report's findings and continue to evaluate their risks and impacts to science. The 2012 Blue Ribbon Report did provide such further investigation but also indicates that NSF has not acted on the 2005 recommendations.

It is a challenge for NSF to ensure that the icebreakers necessary to resupply the research stations are available, other logistical support to enable research is sound, and programs to ensure the health and safety of the researchers and contractors in Antarctica are adequate. We recognize that these challenges are substantial, particularly under current budget constraints. However, as noted by the Blue Ribbon Panel, failure to address these issues could undermine and ultimately halt certain research efforts. It is imperative that NSF prioritize logistical support needs; develop contingency plans; and establish a long range strategy to address these critical needs.

**OIG's Assessment of the Agency's Progress:** We understand that NSF plans to respond to the Blue Ribbon Panel Report and to develop an associated action plan later this year. NSF indicated that it had a contingency plan that would have enabled the USAP to operate at a reduced level for two years if an icebreaker was not available; however, in July the agency contracted for a Russian icebreaker that will resupply the 2012 and 2013 seasons.

## **CHALLENGE: *Implementing Recommendations to Improve Workforce Management and the Workplace Environment***

**Overview:** The National Science Foundation is recognized nationally and internationally for its preeminent role in funding scientific research. To maintain its high caliber work force and to strengthen its ties with the research community and provide critical talent and resources, NSF supplements its permanent, career workforce with a variety of non-permanent staff. All of the non-permanent appointments are federal employees except for those on Intergovernmental Personnel Act (IPA) assignments; IPAs remain employees of their home institution.

As of August 1, 2012, there were 198 IPAs at NSF, 21<sup>26</sup> of which were in managerial or executive positions. Assistant Directors head each of NSF's seven science directorates and provide leadership and direction to their respective directorates. As of the same date, five of the seven Assistant Directors and one of the Office Heads were IPAs. Assistant Directors are also responsible for planning and implementing programs, priorities, and policy. Similarly, NSF has four science offices led by Office Heads. Within each science directorate are multiple divisions. Fourteen IPAs were division directors. As a result of its reliance on IPAs, NSF experiences a great deal of turnover in its executive ranks.

**Challenge for the Agency:** Because IPAs' salaries are not subject to federal pay limitations, NSF can incur additional salary cost in using them, above what it would incur for in hiring federal employee in the same position. Other additional costs associated with IPAs can be fringe benefits, lost consulting fees, and travel and relocation expenses.

IPAs generally have not worked in the federal government and therefore, are often not familiar with government rules and administrative processes in the federal workplace. Effectively preparing IPA executives for the federal workplace has been a challenge for NSF.

In addition to the challenges to effective personnel management performance and oversight posed by its use of IPAs, NSF has also faced challenges in implementing recommendations for workforce management change. In response to concerns from the Congress, the OIG, and NSF staff, the Foundation assembled working groups of NSF staff to assess the issues and make recommendations. Between September 2009 and August 2012, these groups made 102 recommendations to NSF management. NSF continues to grapple with prioritizing, tracking, and implementing these recommendations. It is a continuing challenge for NSF to move beyond discussion of issues to acting on workforce management issues, some of which are longstanding and have been made by more than one working group.

**OIG's Assessment of the Agency's Progress:** NSF has taken several steps to orient IPAs and other rotating executives through its New Executive Transition Program, which includes a pilot for executive coaching and development of knowledge transfer tools. NSF has instituted mandatory

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<sup>26</sup> Remaining IPA executive was in a position of "science advisor"

training for all new and continuing executives. Additionally, NSF now requires IPAs to receive annual performance ratings just as career employees do. NSF reported that it had resolved 73 of the 102 recommendations for workforce management change.

### ***CHALLENGE: Encouraging the Ethical Conduct of Research***

**Overview:** Congress passed the America COMPETES Act in 2007 to increase innovation through research and development, and to improve the competitiveness of the United States in the world economy. With regard to NSF, the Act mandates new proposal requirements to advance the professional and ethical development of young scientists, such as mentoring plans for all postdoctoral positions, and plans to provide training on the responsible conduct of research to undergraduates, graduate students, and postdoctoral researchers. However, information collected from our site visits and investigations suggests that many institutions are not taking these requirements seriously, thereby undermining the public's confidence in the research enterprise and potentially placing NSF funds at risk. NSF is challenged to provide more oversight on institutional implementation of these requirements and to provide meaningful guidance regarding Responsible Conduct of Research (RCR) training.

**Challenge for the agency:** NSF's primary challenge is to ensure that awardees implement credible RCR programs, thereby creating a top-down culture of academic integrity that extends to all levels of the university. At a time when opinion surveys indicate that more Americans are becoming distrustful of science, it is important that the conduct of scientific research not be tainted by instances of misrepresentation or cheating. Affirmative steps are necessary to counter the trends of increasing integrity-related violations. Recent surveys suggest that 75% of high school students and 50% of college students admit to cheating, and 30% of researchers admit to engaging in questionable research practices. Consistent with these survey results, OIG has seen a dramatic increase in substantive allegations of plagiarism and data fabrication, especially as it relates to junior faculty members and graduate students. Over the past 10 years, the number of allegations received by our office has more than tripled, as has the number of findings of research misconduct NSF has made based on OIG investigation reports.

Only 10% of the science and engineering workforce hold PhD's. For this reason the NSF Act places responsibility on NSF to "strengthen scientific [and engineering] research potential at all levels in ... various fields." NSF's research and training programs reach individuals who are ultimately employed by academia, industry, and government, and could have a broad and positive impact on the US science, engineering and education workforce. While NSF has been responsive to the recommendations contained in our research misconduct investigation reports, those actions only address incidents after the fact. Extrapolating the number of allegations OIG has received across the 45,000 proposals NSF receives annually, suggests 1300 proposals could contain plagiarism and 450-900 proposals could contain problematic data. Since NSF funds research in virtually every non-medical research discipline, the agency is in a unique position to lead the government response to addressing these disturbing trends at all levels of education.



**OIG's Assessment of the Agency's Progress:** The agency responded to the America COMPETES Act by instituting a requirement that grantees submit mentoring plans for all NSF-supported "post-docs" and have an RCR training plan for NSF-funded students. The NSF guidance was very limited and offered great flexibility to grantee institutions to develop plans tailored to their needs. OIG has observed a wide disparity among grantee RCR programs ranging from high quality mentoring programs to those that simply refer students to web-based or computer-based training. Early intervention remains critical to any effort to ensure that students understand proper professional practices and the implications of misconduct. Anecdotally, we continue to receive substantive data fabrication/falsification allegations involving students and post-docs; we currently have 20 active investigations regarding such allegations. Therefore we continue to believe that more needs to be done and NSF should expand its influence with institutions regarding this important issue. Accordingly, OIG is developing a plan to systematically review RCR plans after the America COMPETES RCR requirements have been given sufficient time for implementation throughout the research community. We intend to conduct a review of institutional efforts in FY 2013.

Research is also an increasingly global enterprise that includes collaborations among countries. OIG's review of the Basic Research to Enable Agricultural Development (BREAD) program proposals and awards highlighted a significant failure of the US PIs to develop comprehensive oversight programs with foreign subawardees. The most poorly developed aspects of these plans were in RCR training and research misconduct reporting. Based on recommendations in our report, NSF modified its solicitation for the next round of proposals for the program to clearly require oversight plans that address all of the program's requirements, and it asked the current grantees to describe how they would address RCR training and research misconduct enforcement.

An OIG follow-up review found that the majority of the original awardees' plans, as well as three of the four new awardees' plans, were deficient regarding RCR training and research misconduct. In response to our recommendations, NSF agreed to: (1) determine how to bring the current program awardees' oversight plans in line with the requirements for RCR training and research misconduct reporting and enforcement; and (2) make no future awards for proposals that do not provide comprehensive oversight plans that were demonstrably developed in collaboration with the international subawardees, including strong plans for RCR training and research misconduct reporting and enforcement.

### ***CHALLENGE: Managing Programs and Resources in Times of Budget Austerity***

**Overview:** More than ever, Federal agencies and managers are expected to maximize the value of every dollar spent or risk losing the confidence of their stakeholders. Responsible managers across government are reviewing their operational activities in light of increased public anger over waste and mismanagement to determine where and how money might be saved. During the past year, the administration issued an executive order requiring agencies to establish a plan for reducing specific types of administrative costs by at least 20 percent below FY 2010 levels. Travel and conference costs have been singled out for even greater scrutiny and cost savings. While government

budgets are developed long in advance, there are numerous discretionary expenditures in every organization that occur on a weekly or monthly basis and present real opportunities for savings.

OIG has performed several audits over the past few years to examine some of the agency's regular expenditures and identify potential cost savings, as well as changes to the procurement process, that could lead to efficiencies and reduced opportunities for fraud waste and abuse. Our audit of Independent Research/Development (IR/D) travel policies and practices determined that travel costs and time were not being monitored consistently across the agency. Expenditures of approximately \$1.8 million were incurred in FY 2010 under the IR/D program, which allows some NSF staff to spend up to 50 work days a year at their home institutions and attend related conferences. We recommended that the agency consider establishing an annual limit for individual IR/D travel costs, encouraging participants to take fewer trips of longer duration, or to combine NSF telework with IR/D travel. Since the annual cost of IR/D-related trips per traveler ranged from \$225 to \$45,000, reducing IR/D travel costs would help the agency meet the requirements of the administration's executive order.

OIG's audit of NSF staff retreats, a subset of conference-related spending, recommended that the agency reevaluate the practice of traveling outside of the Washington metropolitan area and improve its internal controls to better ensure cost containment and compliance with applicable standards. Without controls such as clear policy guidance and adequate monitoring, NSF may be overpaying for staff retreats. NSF held a total of 95 staff retreats in FYs 2010 and 2011, which the OIG estimated cost the agency at least \$361,000.

**Challenge for the Agency:** There are many opportunities to conserve money within a \$7 billion dollar organization like NSF without undermining the agency's core mission. The agency is therefore challenged to identify opportunities to streamline processes and cut costs where it can, in order to send a clear message to its employees and stakeholders that strong, sound management practices are being applied; reasonable ideas to reduce spending are welcome and will be implemented; and at a time of hardship for so many Americans, the public's continued financial support for science is not taken for granted.

**OIG's Assessment of the Agency's Progress:** NSF responded positively to the two OIG reports described in the overview. In June, a staff memorandum from the Director promised that NSF would identify opportunities for savings in spending on travel and conferences, and that new guidelines and goals associated with cost savings are forthcoming. It also reported that it was on track during FY 2012 to reduce agency travel by 9 percent below its 2010 baseline. With regard to the IR/D program, the agency agreed that additional steps are needed to strengthen management controls and implemented changes to improve program oversight and accountability in May. NSF is considering further actions and should encourage new ideas that save the government money and foster a culture of economy and efficiency.



