The background of the slide is a light blue-tinted image showing a hand holding a pen, poised to write on a document. The document contains a table with several rows and columns, though the text is faint. The overall aesthetic is professional and clean.

Chapter 3

Appendices

Summary of Financial Statement Audit and Management Assurances

Table 1. Summary of Financial Statement Audit

Audit Opinion	<i>Unqualified</i>				
Restatement	<i>No</i>				
Material Weakness	Beginning Balance	New	Resolved	Consolidated	Ending Balance
Total Material Weaknesses	0	-	-	-	0

Table 2. Summary of Management Assurances

Effectiveness of Internal Control over Financial Reporting (FMFIA § 2)					
Statement of Assurance	<i>Unqualified</i>				
	Beginning Balance	New	Resolved	Consolidated	Ending Balance
<i>Total Material Weaknesses</i>	0	-	-	-	0
Effectiveness of Internal Control over Operations (FMFIA § 2)					
Statement of Assurance	<i>Unqualified</i>				
	Beginning Balance	New	Resolved	Consolidated	Ending Balance
<i>Total Material Weaknesses</i>	0	-	-	-	0
Conformance with Financial Management System Requirements (FMFIA § 4)					
Statement of Assurance	<i>Systems conform to financial management system requirements</i>				
	Beginning Balance	New	Resolved	Consolidated	Ending Balance
<i>Total Non-Conformances</i>	0	-	-	-	0
Compliance with Federal Financial Management Improvement Act (FFMIA)					
Overall Substantial Compliance	Agency		Auditor		
	Yes		Yes		
1. System Requirements	Yes				
2. Accounting Standards	Yes				
3. U.S. Standard General Ledger at Transaction level	Yes				

Improper Payments Information Act Reporting

OMB renewed NSF's relief from annual Improper Payments Information Act reporting to a 3-year cycle period starting in FY 2010, due to the agency's low improper payments. For a discussion of NSF's efforts in monitoring improper payments and the Improper Payments Elimination and Recovery Act, see the Management's Discussion and Analysis, page I-24.



National Science Foundation • Office of the Inspector General
4201 Wilson Boulevard, Suite I-1135, Arlington, Virginia 22230

October 17, 2011

MEMORANDUM

To: Dr. Ray M. Bowen
Chair, National Science Board

Dr. Subra Suresh
Director, National Science Foundation

From: Allison Lerner *Allison Lerner*
Inspector General, National Science Foundation

Subject: Management Challenges for NSF in FY 2012

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

We have focused on seven issue areas that reflect fundamental program risk and are likely to require management's attention for years to come. They include:

- Ensuring Proper Stewardship of ARRA funds
- Improving Grant Administration
- Strengthening Contract Administration
- Implementing Improvements in Workforce Management and the Workplace Environment
- Encouraging Ethical Conduct of Research
- Effectively Managing Large Facilities
- Managing Programs and Resources in Times of Budget Austerity

Additionally, we identified two emerging challenges, transitioning to cloud computing and to the trusted internet connection, and planning for the next NSF headquarters building, that warrant close attention and monitoring.

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

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 over time. NSF staff worked diligently to obligate over 4000 awards during 2009, and the last of the ARRA funds were obligated by September 2010. NSF awardees have registered a 99.8 percent compliance rate with ARRA reporting requirements.

As of the end of FY 2011, just \$1.38 billion of NSF's ARRA funds have been expended, the lowest spending rate (or "burn rate") among federal agencies. On September 15, 2011 OMB issued a memorandum to the heads of federal agencies urging them to spend remaining Recovery funds, and to recapture discretionary grant funds not spent by the end of FY 2013 "to the fullest extent of the law". There are 638 NSF ARRA awards that will not expire until after FY2013.

Challenge for the Agency: The challenge for the agency is: 1) to assure that ARRA funds are not subject to fraud, waste and abuse, 2) to evaluate its award portfolio and identify and reach out to those awardees that are able to accelerate spending within the next two years, and 3) to monitor ARRA awards to assure that grantees continue to fulfill their reporting responsibilities. As ARRA awardees spend down their funds, NSF program managers and administrative staff must be alert to indications of fraud, waste and abuse and intervene when appropriate. In tough economic times such as these, they should also be sensitive to the *appearance* of impropriety or waste, even if rules are not explicitly broken.

In addition, NSF must make a serious effort to press ARRA award recipients to accelerate their spending in support of the U.S. economy, which was one of the primary purposes of the Recovery Act. 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. Finally, NSF must continue to promote the timely and accurate reporting of financial information by ARRA recipients. A series of OIG reports issued during March 2011 reviewed the reporting practices of seven ARRA recipients and found that smaller awardees lack a clear understanding of the requirements, and thus pose an increased risk of non-compliance. NSF must continue to inform and monitor ARRA awardees about their obligations under the Act.

OIG's Assessment of the Agency's Progress: The agency has worked cooperatively with OIG to identify potential occurrences of fraud, waste and abuse associated with ARRA funds. Regarding the low spending rate of ARRA recipients, NSF states that it is consistent with the expectations that surround academic research and its pattern of spending. The agency continues to actively monitor recipient reporting and the spending of grantees. It has enforced its burn rate condition requiring recipients to expend ARRA funds within one year, and implemented report review logic to catch under or over reporting of jobs created by ARRA.

CHALLENGE: Improving Grant Administration

Overview: In 2010, NSF funded more than 55,000 active awards involving over 2,100 institutions. In light of the fact that most of those awards are made as grants, it is essential that the Foundation's grants management processes be robust enough to ensure the highest level of accountability and stewardship in its external awards portfolio. In particular, those processes should enable the agency to engage in effective oversight throughout the lifecycle of an award.

Challenge for the Agency: Previous OIG audits of NSF's operations have found that the Foundation needs to improve its oversight of awardees' financial accountability, programmatic performance, and compliance with applicable federal and NSF requirements. NSF's Award Monitoring and Business Assistance Program (AMBAP) was designed to provide advanced monitoring activities to ensure that awardee institutions possess adequate policies, processes, and systems to manage their NSF awards.

In FY 2011, NSF performed 26 of the 30 AMBAP planned site visits. NSF has indicated that it was unable to undertake all planned visits due to staffing constraints. Performing the AMBAP site visits is resource intensive as it requires an experienced grant officer to travel to the institution, spend several days on-site, prepare the report, and follow-up on any corrective actions. As continuing budget restrictions are anticipated, it will be an ongoing challenge for NSF to maintain adequate oversight.

Our December 2009 audit of the process for resolving audit recommendations directed at NSF grantees and for following up to ensure that corrective actions are implemented, made several recommendations for improvement. A robust audit resolution process is critical to ensure that institutions receiving funds from NSF take the necessary corrective action to properly manage those funds.

In addition, it is important for NSF to ensure that awardees are providing sufficient oversight of sub-recipients. Our audits continue to find problems in sub recipient monitoring such as inadequately supported and unallowable costs. We have recommended that NSF expand and improve its sub-award monitoring procedures.

OIG's Assessment of the Agency's Progress: In its progress report on the 2011 management challenges, NSF reported that it had taken several actions to strengthen grants management including modifying the AMBAP risk assessment based on analysis of prior findings, focusing attention on institutions that have the least experience in managing federal funds, and conducting outreach to improve compliance.

In response to our audit of the audit resolution process, OIG and NSF formed a working group which developed a new audit resolution process to create more effective stewardship over federal funds awarded by NSF. A joint NSF/OIG work group, the Stewardship Collaborative, continues to work to monitor and improve the audit resolution process and to jointly address outstanding and emerging issues.

CHALLENGE: Strengthening Contract Administration

Overview: For two consecutive years, the monitoring of cost reimbursement contracts has been cited as a significant deficiency during NSF's annual financial statement audit. Cost reimbursement contracts are inherently risky because the government shares the risk that poor performance on the part of the contractor will result in cost overruns. In FY 2011, NSF obligated \$447 million for all contracts. Of that amount, \$315 million were for cost reimbursement contracts, including \$232 million in advance payments issued before work was done.

The FY 2010 financial statement audit report presented seven recommendations for strengthening NSF's contract monitoring practices, cautioning the agency that more attention must be paid to the basic tools of the trade such as incurred cost audits, cost disclosure statements, and cost submissions that are used to check the contractor's compliance with contract terms and federal regulations. Contracting weaknesses have come to light as the agency prepares to award its largest contract, which will provide logistical support to the U.S. Antarctic Program over the course of a decade. Following several delays in the procurement process, the award is expected to be completed by mid-November 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, and to continue to improve the effectiveness of its policies, practices and contracting professionals. The agency is still in the process of obtaining audits of millions of dollars in costs incurred from 2005 – 2010 by the current USAP contractor, a process that was delayed because the USAP contractor did not have an approved cost disclosure statement. There is no assurance that the agency does not overpay for these services without incurred cost audits and approved cost disclosure statements. As a matter of policy, NSF should obtain disclosure statements and incurred cost audits of its largest contracts on a regular basis and promptly resolve any questioned costs that arise.

Corrective actions aimed at strengthening the weaknesses cited by the financial auditors should be implemented as soon as possible. Much can be accomplished without additional resources, but NSF has requested 11 additional staff in its past two budget requests to form an acquisition support team for contracts. In light of the current budget environment, NSF should consider other alternatives besides adding staff in order to address this challenge.

OIG's Assessment of the Agency's Progress: NSF has made progress toward improving its administration of contracts. The agency now requires its contract specialists to ensure that vendors have disclosure statements prior to making awards. In addition, over the past year NSF successfully resolved questioned costs related to the USAP contractor and recovered \$10.8 million. It has also fully funded DCAA's costs to complete the 2005 thru 2010 incurred cost audits associated with the contract. However, the audits are still in progress, and it is uncertain as to when they will be concluded.

CHALLENGE: Implementing Improvements in Workforce Management and the Workplace Environment

Overview: World-class executive leadership and effective human capital management are essential to NSF's success as a high-performing organization. Thus, the agency's executives must demonstrate outstanding administrative and leadership skills as well as possess exceptional scientific knowledge and expertise for the agency to achieve its fullest potential. To strengthen NSF's ties with the research community and provide the agency with talent, resources, and cutting-edge research and scientific expertise, NSF relies on a variety of non-permanent staff. In 2010, approximately 26 percent of all NSF employees were in some type of non-permanent status, and 20 of the agency's 75 executive level staff came to NSF from academic and non-profit institutions pursuant to the Intergovernmental Personnel Act (IPA). 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.

Challenge for the Agency. The Office of Personnel Management, Congress, and the OIG, as well as NSF management and staff, have expressed concerns about workforce management and the workplace environment at NSF. Addressing workforce and workplace challenges requires sustained management attention and commitment from the Director. NSF's response to these concerns generally has been to assemble working groups of NSF staff to assess the issues and recommend corrective action. These groups have given thorough attention to these issues and made more than 100 recommendations for change. However, NSF does not have an effective, structured process for implementing the workforce management changes called for in these recommendations. The workforce management change process also suffers because it lacks a permanent champion with both the time and authority to lead in this area.

The fact that senior leadership positions including the Director for the Office of Information and Resource Management, the Chief Human Capital Officer, and the Director for Human Resource Management were filled for much of 2011 with individuals serving in a temporary or interim status presents an additional challenge to implementation of workforce management improvements.

NSF also faces ongoing challenges in effectively preparing and integrating its rotating executives into the federal government workplace. The temporary nature of NSF's rotator model creates additional challenges to ensure that new executives have the full set of skills (scientific, administrative, and leadership) necessary to lead the agency.

OIG's Assessment of Agency Progress: NSF has taken several steps to address workforce management and workplace environment challenges. For example, NSF now includes IPAs in the performance management system and plans to issue performance appraisals for IPAs in executive level positions in fall 2011. The agency has promulgated a mandatory management training policy for new managers and executives and has developed and actively promotes new leadership and management training programs. NSF also reported that it has addressed 38 recommendations for workforce improvement and that work on an additional 10 recommendations is underway. Despite this progress, critical human resource leadership

positions remain filled with individuals acting in a temporary or interim capacity. Finally, permanent leadership for these critical positions should be a high priority for the agency.

CHALLENGE: Encouraging Ethical Conduct of Research

Overview: In 2007, Congress passed the America COMPETES Act to invest in innovation through research and development, and to improve the competitiveness of the United States. Among other things, the Act mandates new proposal requirements for NSF, 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. Information gleaned from site visits and through investigations suggests that many institutions are not taking these requirements seriously, thereby placing NSF funds at risk. Integrity is the keystone of the scientific process and product. Without it, precious research funds are wasted both by unprincipled researchers as well as by those researchers whose time, effort, and funds are wasted when they try to replicate the work of their unprincipled colleagues. NSF is challenged to provide more oversight on institution 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. Affirmative steps are necessary to counter the trends of increasing integrity violations. Recent surveys suggest that 75% of high school students and 50% of college students admit to cheating, and 30% of researchers admit to questionable research practices. The science and engineering workforce is an increasing percentage of the overall workforce, but only 10% hold PhD's. 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 ultimately are employed by academia, industry, and government. Its broad effect on the US science, engineering and education workforce means that NSF must act to ensure clear understanding of research tenets for all those receiving the benefits of its funds.

Our investigations are consistent with the survey results mentioned above. OIG has seen a dramatic increase in the 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. Although NSF's response to our research misconduct investigation reports is commendably strong, 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. Given that NSF funds research in virtually every non-medical research discipline, it 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 postdocs 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 seen grantee RCR programs ranging from high quality mentoring programs to those that simply refer students to web-based or computer-based training. In one instance, a large institution was proud to have trained the two students who were strictly required by NSF policy to be trained (this was an institution of more than 50,000 students). Early intervention is critical to ensuring that students understand proper professional practices and the implications of misconduct. Based on what we have seen, NSF should expand its influence in this arena.

Research is also an increasingly global enterprise. Addressing integrity issues and training in domestic efforts is not sufficient to ensure the integrity of NSF funded activities. 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 collaboratively develop oversight programs with foreign subawardees. The absence of such collaboration resulted in the submission of proposals and the awarding of grants that contained plans applicable to only domestic awards. The most poorly developed aspect of these plans was in the responsible conduct of research training and research misconduct reporting. Based on our report NSF took two actions. The agency modified its subsequent solicitation to include more details about the expectations for oversight plans; and it encouraged the development of comprehensive oversight plans in collaboration with the international subawardees. Unfortunately, our recent review of annual reports demonstrates little significant improvement in the oversight plans, a result that is distressing. In considering how it will effectively address this challenge NSF should ensure that annual reports and future proposals comprehensively address oversight plans.

CHALLENGE: Effectively Managing Large Facilities and Instruments

Overview: Due to their inherent financial and operational risks, managing the design, construction and operation of NSF's large science infrastructure projects has appeared on OIG's list of management challenges for the past decade. When the agency decides to construct a telescope, earthquake simulator, or other scientific tool, it generally enters into a cooperative agreement with an institution to design, build and manage the facility. NSF received \$117 million for its Major Research Equipment and Facilities Construction account for FY 2011 and \$400 million in Recovery Act funds in FY 2009 for the construction of three major facilities that are currently under development. The agency has made steady progress towards improving its project management capability since 2003, when NSF first appointed a Deputy Director for Large Facilities. However, according to three recent audits conducted by DCAA for the OIG, costs for contingency provisions contained in each of the contracts are unallowable.

Challenge for the Agency: NSF needs to ensure that the process it is using for developing, managing, and accounting for contingency funds is sound. In September 2011, OIG issued an audit report of a proposal to build the National Ecological Observatory Network. It found that the bid included \$76 million in unallowable contingency costs. Earlier in 2011, an audit of the proposal to build the Advanced Technology Solar Telescope questioned 21 percent of the cost, or \$62 million, that was reserved for contingencies. The two audits questioned those costs on the basis that setting aside contingent funds for events that lack a certain level of specificity is unallowable.

The same issue also arose in connection with a 2010 audit of the proposed budget for the Ocean Observatories Initiative which included \$88 million for contingencies. Auditors recommended the removal of the unallowable contingency provisions from the proposed budgets, and advised NSF to implement policies that require the agency *rather* than the awardee to control the contingency funds until a need for them is demonstrated. Without adequate controls on the establishment and utilization of contingencies, the agency cannot be certain that funds are not being used to hide poor project planning, management or other deficiencies in administration.

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 contingencies. Once agreement is reached, NSF has indicated that it will update the Contingency Policy and Procedures module of its Large Facilities Manual. In addition, the agency states that it has engaged in a number of activities to strengthen its oversight policies related to large facilities, including several business system reviews of large infrastructure projects such as Cornell High Energy Synchrotron Source (CHESS) and Network for Earthquake Engineering Simulation (NEES).

CHALLENGE: Managing Programs and Resources in Times of Budget Austerity

Overview: Taxpayers expect government managers to be prudent custodians of agency funds in both good times and bad, but expectations are even higher when federal deficits are large and budgets are tight. In tough economic times Federal agencies and programs must make every dollar count or risk losing the public's confidence. Responsible managers should re-evaluate their operational activities in light of the current economic conditions and determine where and how money might be saved. 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.

Recently OIG has performed several reviews to examine expenditures such as these and identify possible cost savings, as well as changes that might be made to the way goods and services are purchased that could lead to efficiencies and reduced opportunities for fraud waste and abuse. For example, NSF spends \$500,000 per year to provide light refreshments to peer review panelists, when a per diem payment for food is already included as part of their compensation. The report recommended that NSF reconsider these expenditures and if it decided to continue them, then centralize the purchasing process as a safeguard against excessive charges and potential fraud. In another review, OIG assessed NSF's purchases of wireless devices and services, which in FY 2010 amounted to \$660,000. Like the earlier review, the report cited the need for a centralized procurement process which could result in economies of scale when purchasing, and concluded that the agency should establish a policy to guide the purchase, distribution and use of wireless technology.

Challenge for the Agency: There are many opportunities to conserve money within a \$7 billion dollar organization like NSF without impinging on 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 acted on; and at a time of hardship for so many, the public's continued financial support for science is not taken for granted.

OIG's Assessment of the Agency's Progress: The NSF Director demonstrated support for efforts to curb wasteful spending at a recent all-hands meeting when he asked staff for their ideas to save the agency money. However, NSF should follow up on his statement with a more aggressive outreach initiative to enlist as much participation as possible. The agency responded to the report on refreshment purchases by setting a cost ceiling of \$25 per day for each recipient a promise to exercise more oversight over the program, and a commitment to analyze the costs and benefits of centralized purchasing. NSF also agreed to develop a policy regarding wireless devices and services, and to analyze the costs and benefits of a centralized purchasing process before deciding whether or not to adopt the recommendation.

We have also identified two emerging challenges that warrant NSF's close attention—transitioning to cloud computing and to the trusted internet connection and planning for the next NSF headquarters.

Transitioning to Cloud Computing and to the Trusted Internet Connection

Cloud computing enables agencies to achieve efficiencies by utilizing shared computing resources, such as servers, networks, storage, applications, and services. The Federal Cloud Computing Strategy and the Cloud First Policy state that Federal agencies are to consider safe, secure computing options before making any new information technology investments.

In September 2011, NSF reported that it has established pilots to evaluate email and instant messaging operations in a private cloud environment. As NSF considers plans to transition information, applications, or data to the cloud, it needs to ensure that security and internal control considerations are addressed, and that cloud computing contracts provide adequate access to information, and appropriate application maintenance for the protection of data and intellectual property.

Regarding the Trusted Internet Connection, pursuant to OMB direction, agencies are required to reduce and consolidate the number of external access points, including Internet connections, and ensure those connections are routed through an OMB-approved Trusted Internet Connection. NSF has migrated its internet connections to a Trusted Internet Connection provider. NSF retains primary responsibility for information technology security and should continue to coordinate its security requirements with the Trusted Internet Connection provider to ensure it utilizes strong information technology safeguards. It is critical that NSF review and understand the risks and costs of cloud technology as it considers moving data to the cloud. The OIG will be closely following NSF's progress in this endeavor.

Planning for the Next NSF Headquarters

NSF's leases for headquarters facilities in Arlington, Virginia expire in December 2013. It appears that NSF is meeting the planning milestones that are the necessary prerequisites for

Congressional action. In its FY 2012 budget submission, NSF requested that funds for its relocation remain available until expended to allow it flexibility for planning and executing the most cost effective acquisition strategies. The report accompanying the Senate Commerce, Justice, Science FY 2012 appropriations bill directed NSF to find savings from future headquarters planning.

Planning for a new headquarters building during a time of budget austerity presents a challenge for NSF. As the lease expiration approaches, the OIG will pay close attention to NSF's activities in this area.

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230



**OFFICE OF THE
DIRECTOR**

MEMORANDUM

Date: October 28, 2011

To: Allison C. Lerner
Inspector General, NSF

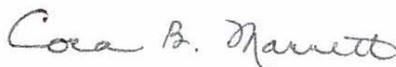
From: Deputy Director and Chief Operating Officer, NSF

Subject: NSF's Progress on the Fiscal Year (FY) 2011 Management Challenges, and
Acknowledgement of Receipt of the Inspector General's FY 2012 Management
Challenges Memorandum

The attached Progress Report highlights the accomplishments we have achieved on the management challenges during FY 2011, which covered six broad areas: Ensuring Proper Stewardship of ARRA funds; Improving Grant Administration; Strengthening Contract Administration; Becoming a Model Agency for Human Capital Management; Encouraging Ethical Conduct of Research; Effectively Managing Large Facilities; and two Emerging Challenges: Implement the Open Government Directive, and Planning for the Next NSF Headquarters. Some of these management challenges are fundamental issues that the Foundation is dealing with on a continuing, collaborative cross-agency basis.

Thank you for your memorandum of October 17, 2011, regarding potential management challenges for the National Science Foundation in FY 2012, and for noting the likely long-term focus of the challenges, especially in an era of constrained resources. As in past years, your memorandum will be shared and discussed with the Foundation's executive staff and senior officers.

The Foundation remains committed to serving our community effectively, continually improving stewardship across the agency, and safeguarding the federal funds awarded by NSF, while supporting the NSF mission. We look forward to working with your office to achieve these goals.


Cora B. Marrett

Attachment

cc: Chair, National Science Board
Chair, National Science Board Audit and Oversight Committee
Director, NSF

National Science Foundation (NSF) Fiscal Year (FY) 2011 Progress Report on OIG Management Challenges

CHALLENGE: Ensuring Proper Stewardship of ARRA Funds	
<p>NSF Overview: The Foundation continues implementation and management of its American Recovery and Reinvestment Act (ARRA) portfolio. NSF is an important agency in the Administration’s ARRA implementation efforts because advancements in technology resulting from fundamental research are a major driver in the long-term growth and overall strength of the American economy. As of September 30, 2011, \$1.38 billion of NSF’s ARRA funds have been expended. NSF is unique, among other agencies, in that almost its entire portfolio funds universities. Outlay rates are consistent with expectations given the academic calendar and the anticipated pattern of research spending. NSF’s exemplary ARRA recipient reporting program and its rigor in implementing its burn rate condition requiring recipients to expend ARRA funds within a year of award or risk termination, not only make NSF well suited in its role as an ARRA funding agency, but also make it poised to successfully meet the challenges of increased levels of accountability and transparency in government spending.</p>	
<p>a. <i>Monitor ARRA awards: grantee compliance with reporting requirements</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Implemented a robust comprehensive, multi-stage review program for recipient reporting, which matured over the eight reporting quarters. Received both Office of Management and Budget (OMB) and the Recovery Accountability and Transparency Board (RATB) recognition of the Foundation as a leader in the federal community for recipient reporting. Delivered a 99 percent compliance rate over the last seven reporting quarters with several quarters reaching 99.9 percent compliance.</p> <p>Conducted targeted outreach through phone calls and emails to recipients in danger of non-compliance with reporting requirements for multiple quarters. Continued NSF’s practice of sending multiple reminder e-mails to recipients, alerting recipients of their non-compliance.</p> <p>Suspended two-time non-compliant grantees until the grantees reported in the subsequent quarter and terminated the awards of three-time non-compliant grantees.</p> <p>Shared recommendations for recipient reporting process improvements to enhance data quality government-wide, including pre-population of Recovery.gov fields and the implementation of agency certification and lock-down of data fields to resolve instances of data exceptions for certain data elements.</p>
	<p>NSF’s Anticipated Next Steps</p> <p>Continue targeted outreach approach to non-compliant awardees.</p> <p>Continue to monitor and improve the Foundation’s reporting program to ensure that we maintain a high-compliance rate in this area and that the agency maintains excellence in an era of diminishing resources.</p> <p>Continue to work with the RATB, OMB, and others to contribute expertise to government-wide recipient reporting process improvement.</p>
<p>b. <i>Reporting: jobs created or saved</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Fully implemented report review logic to review all reports for over- and under-reporting of the number of jobs. Collaborative effort of the tiger team which includes both NSF and OIG staff, resulted in additional review to determine whether jobs numbers could be under-reported.</p> <p>Strengthened the tiger team’s review of under-reporting of jobs based on an OIG recommendation for a RATB required review of</p>

Appendix 3B: NSF FY 2011 Progress Report on OIG Management Challenges

	<p>agency recipient reporting processes, resulting in a smaller list of potential issues from which NSF determines the actual number of jobs issues. Engaged recipients to review their reported jobs numbers.</p> <p>NSF's Anticipated Next Steps</p> <p>Continue comprehensive report review procedures and contact recipients when jobs numbers appear to be either over- or under-reported to validate the job numbers.</p> <p>Continue to seek ideas to improve the quality of NSF's number of jobs review.</p>
<p><i>c. Planning and management of large, complex infrastructure projects</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Continued implementation of agency-wide requirements for large facilities projects that receive ARRA funds including application of the Davis Bacon Act and Buy America Act to all three Major Research Equipment and Facilities Construction (MREFC) ARRA-funded projects. Drafted written procedures that the agency and awardees may refer to when carrying out the Davis Bacon Requirements. Helped awardees secure wage determinations from the Department of Labor.</p> <p>Updated internal Business Systems Review (BSR) processes and documentation to ensure that all ARRA-related requirements, such as recipient reporting, are appropriately considered during the review, and completed a BSR on the Alaska Region Research Vessel (ARRV) project. Initiated a BSR of the National Ecological Observatory Network (NEON), including ARRA-funded Airborne Observation Platform (AOP).</p> <p>Continued to work cooperatively with the OIG, sharing drafts (e.g., BSR process documentation related to the ARRV review) to facilitate more effective OIG oversight, which has helped the agency proactively strengthen its BSR process by identifying OIG concerns early, allowing for real time improvements, increasing communication around BSR goals, and facilitating better scheduling and coordination around planned OIG audits and BSRs of the same institution as in the case of NEON.</p> <p>Continued to partner among NSF divisions to refine agency business practices, creating a more systematic approach to monitoring and oversight for ARRA projects.</p> <p>Refined agency procedures and business systems to properly segregate MREFC and ARRA appropriations and to ensure that the agency's cooperative support agreements include special terms and conditions specific to ARRA requirements.</p> <p>Worked diligently to communicate the NSF position on the issue of contingency on our large facilities in construction, and to address concerns raised by the OIG. Facilitated this via a BFA led, NSF-wide collaboration, which continues to seek a resolution to this significant concern identified by the OIG.</p> <p>Updated all construction cooperative agreements containing budgeted contingency to ensure the terms and conditions of the cooperative agreements give NSF adequate oversight and monitoring of contingency funds.</p> <p>NSF's Anticipated Next Steps</p> <p>Continue to monitor and incorporate lessons learned in BSR documentation, processes and practices.</p> <p>Continue with follow-up and monitoring after the ARRV BSR.</p> <p>Finalize schedule and conduct BSRs planned for FY 2012.</p> <p>Continue to monitor and work with awardees to develop a process that adheres to the ARRA Buy America Requirements.</p>

<p><i>d. ARRA funds to support the Academic Research Infrastructure Program</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Created a single point of contact in the Division of Grants and Agreements (DGA) to ensure consistency for all Academic Research Infrastructure (ARI) awards across Directorates.</p> <p>Acknowledged the additional emphasis placed on stewardship over ARRA investments by incorporating special weighting factors into NSF's Risk Assessment Model and ARRA-specific modules into advanced monitoring protocols; amended award-specific provisions as needed to restrict awardee expenditures until specific requirements are met.</p> <p>Worked cooperatively (ARI program officer, OGC, DGA) to develop a resource document to address streamlined and consistent guidance for subaward approvals, contingency spending, and Davis-Bacon reporting. Initiated management of ARI amendments, subaward approvals, and approvals for new funds through the DGA portfolio facilitator for the particular Division to which the ARI award was assigned.</p>
	<p>NSF's Anticipated Next Steps</p> <p>Continue ARI Program Work Group meetings on an as needed basis.</p> <p>Continue expenditure monitoring for compliance with ARRA terms and conditions.</p> <p>Continue monitoring of expenditure limitations on a case by case basis for the majority of ARI awards that involve subaward approvals and contingency spending.</p> <p>Continue to monitor progress with quarterly narrative reports where the program officer can follow up as needed.</p> <p>Continue to make site visits when a program officer or grants officer determines such a visit would facilitate post-award management; 10 percent of ARI awardees have been visited to date.</p> <p>Continue working with ARI program staff, the CFO's office, OGC, and Budget to allow a <i>de minimis</i> waiver to the Buy America ARRA requirements for ARI awardees.</p>

CHALLENGE: Improving Grant Administration

NSF Overview: On September 30, 2011, NSF was managing 44,656 active awards, representing \$27.5 billion in obligations, to 3,145 unique awardees. NSF grants management activities follow awards throughout their life cycle – pre- through post-award. Accountability requires clear expectations, as well as a well-trained staff, resources, tools, and assistance for NSF programs and the awardee community. Over the past year, NSF made significant upgrades to the suite of policy, procedures, and award terms and conditions in order to align with major changes in Federal regulations, legislative mandates, and Agency-specific requirements. A variety of mechanisms are being used to communicate these upgrades to NSF staff and the field. A sea change in the NSF-OIG relationship has led to an upgraded audit resolution policy and will be strengthened by on-going dialogue. NSF continues to upgrade and integrate business rules into its corporate IT systems; assist staff and grantees in ensuring compliance; fully support federal accountability and transparency efforts; and enable monitoring and assessment of Agency performance. Significant stakeholder involvement has been elicited in the development of new IT systems, data quality enhancements, and innovative uses of business intelligence tools to further enhance performance. NSF continues to strengthen its risk-based approach to post-award monitoring and business assistance by providing reasonable assurance that institutions (especially those most inexperienced in managing federal resources) have requisite policies, processes, and systems for the effective management of federal funds.

<p><i>a. Ensure effective oversight of awards</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Issued new NSF-OIG operating principles for audit resolution. Established the Stewardship Collaborative to monitor/improve the process and jointly address outstanding and emerging issues.</p> <p>Modified the Award Monitoring and Business Assistance Program (AMBAP) risk assessment based on analysis of prior findings. Focused attention on small, non-traditional institutions with least experience in managing federal funds.</p> <p>Continued planning/pre-acquisition for <i>iTRAK</i>, a state-of-the-art, single, fully integrated, financial management/property solution.</p> <p>Implemented policy upgrades, e.g., <i>Proposal & Award Policies & Procedures Guide (PAPPG)</i>, <i>Proposal</i> and <i>Proposal and Award Manual (PAM)</i> including: (1) requirements for data management plans and sharing of research projects; (2) cost-share revisions; (3) fully electronic DD-concur; and (4) reversal of decision.</p> <p>Conducted general in-reach to NSF program staff and outreach to Principal Investigators (PI), Sponsored Research Offices, and professional societies to strengthen compliance. Increased use of FAQs, NSF Town Hall meetings, and webinars.</p> <p>Completed upgrade of the suite of NSF Award Terms and Conditions.</p> <p>Developed and beta-tested <i>Research.gov</i> "Award Manager," an award management tool providing access to accurate, timely, and reliable administrative, financial, and award data from multiple NSF IT systems.</p> <p>Initiated quarterly, independent validation of PI notifications and eJacket documentation for Final/Annual Project Reports; Cost-share Notifications, and Public Outcomes Reports.</p> <p>Based on guidance from the Attorney General, dated September 27, 2010, that requires federal agencies to ensure that ARRA funds are distributed in a non-discriminatory manner, NSF included language on its ARRA website citing civil rights obligations that were applicable to the distribution of its funds under ARRA, as well as relevant contact information to its Office of Diversity and Inclusion.</p>
	<p>NSF's Anticipated Next Steps</p> <p>Continue to improve NSF-OIG collaborative efforts on strengthening the post-audit process, promoting lasting positive changes in stewardship and communicating with the award community as a single federal agency.</p> <p>Complete revision to Standing Operating Guidance 2001-4, <i>Policies and Procedures for Audit Report Issuance and Resolution of Audit Findings Contained in Audits of NSF Awardees</i>, to align with new post-audit process.</p> <p>Continue development of the New Payment Process System, fully implementing the move from pooling to real time, grant-by-grant management of payments in FY 2013.</p> <p>Continue <i>iTRAK</i> Planning and Pre-Acquisition Phase, moving forward on requirements development, data clean-up, and stakeholder communications.</p> <p>Finalize development and high-level design of Research Performance Progress Report, the federal standardization of interim progress reports for research and research-related activities.</p> <p>Collaborate with NSF major stakeholders to refine <i>Award Manager</i> functionality to strengthen award and program management.</p>

Appendix 3B: NSF FY 2011 Progress Report on OIG Management Challenges

<p><i>b. Increase the number of site visits under AMBAP</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Conducted 26 AMBAP Site Visits, an increase of two over the previous year.</p> <p>Continued the practice that any institution identified as managing higher risk awards and not receiving a scheduled AMBAP Site Visit is subject to an AMBAP Desk Review.</p> <p>Revised AMBAP risk methodology to focus on institutions likely to have challenges managing federal funds, shifting emphasis from the amount of funds to significant findings; this strategy provides business assistance showing the most promise of opportunity for institutional improvement.</p> <p>NSF's Anticipated Next Steps</p> <p>Analyze alternative strategies that maximize use of available resources to broaden as well as strengthen post award monitoring efforts.</p>
<p><i>c. Improve subrecipient oversight and monitoring</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Continued to include subrecipient oversight and monitoring in outreach directed at all phases of the award process. Conducted outreach and other administrative contact within NSF as well as with awardees (recipients) and potential awardees through Site Visits, AMBAP visits, Desk Reviews, and Regional Grants Seminars.</p> <p>Implemented OMB guidance; informed awardees via specific language in award notices of the requirements of the Federal Funding Accountability and Transparency Act (FFATA) award term entitled <i>Reporting Subawards and Executive Compensation</i>.</p> <p>Advised all awardees of the requirement to report in the FFATA Subaward Reporting System.</p> <p>Established an email alias to provide assistance with awardee compliance with the new reporting requirements.</p> <p>NSF's Anticipated Next Steps</p> <p>Continue to upgrade policy and procedural guidance to NSF staff and the field through recurring re-issuance of its policies and procedures manuals, outreach activities, FAQs, etc.</p>
<p>CHALLENGE: Strengthening Contract Administration</p> <p>NSF Overview: Contract administration remains a critical function for NSF. As such, the Foundation has taken a comprehensive approach to improving in this area. NSF has taken steps to strengthen contract administration through both policy and human capital initiatives. Specifically, NSF has strengthened guidance in the <i>Contracting Manual</i> to address policy gaps related to cost reimbursement contracting and has offered on-site training to address acquisition personnel competency gaps in both requirements definition and contract monitoring.</p>	
<p><i>a. Long-term: continue strengthening management of contract administration</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Updated and made progress on implementing the Corrective Action Plan for the Significant Deficiency on Contract Monitoring of Cost Reimbursement Contracts.</p> <p>Updated the <i>Contracting Manual</i> to require contract specialists to ensure that vendors have disclosure statements in place when required prior to awarding cost reimbursement contracts.</p>

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	<p>NSF's Anticipated Next Steps</p> <p>Continue to work with OIG in the implementation and monitoring of Corrective Action Plans.</p> <p>Seek additional opportunities to refine the contracting manual guidance regarding cost reimbursement contracting.</p> <p>Complete review of the draft <i>Price Negotiation Memorandum Guide</i>.</p>
<p><i>b. Administer an effective and successful USAP procurement process</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Executed a modification to extend the U.S. Antarctic Program (USAP) contract through March 31, 2012 to ensure continuity of operations during the source selection phase of the procurement.</p> <p>NSF's Anticipated Next Steps</p> <p>Actively manage the procurement process.</p>
<p><i>c. Closeout the existing USAP contract</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Worked closely with the Defense Contract Audit Agency (DCAA) to resolve audit-related issues: the RPSC Disclosure statement audit by DCAA is in process, and Raytheon incurred cost audits for FY 2005-2010 are in process.</p> <p>Fully funded DCAA's costs to complete the FY 2005-2010 Incurred Cost Audit of the Raytheon contract.</p> <p>NSF's Anticipated Next Steps</p> <p>Continue to work with DCAA and the Defense Contract Management Agency to resolve audit-related issues.</p>
<p><i>d. Continue efforts to strengthen capacity and capability of the acquisition workforce</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Provided a variety of training: annual Contracting Officer Technical Representative (COTR); follow-up brown bag sessions focused on the COTR Handbook and NSF systems, policies, and procedures that impact COTRs; Writing a Statement of Work; and Contractor Performance Assessment Reporting System (CPARS).</p> <p>NSF's Anticipated Next Steps</p> <p>Provide on-site Performance Based Acquisition Course to COTRs and Contracting Professionals.</p> <p>Continue to ensure that the acquisition workforce is certified and trained to appropriate levels to assume assigned contract monitoring duties.</p> <p>Based on the request for 11 full-time equivalents in NSF's 2012 budget, establish an Acquisition Support Team whose purpose is to serve as a resource to support program officers in pre-solicitation, post-solicitation, and post-award contract monitoring activities.</p> <p>Embrace Federal Government Acquisition process improvement initiatives.</p>

CHALLENGE: Becoming a Model Agency for Human Capital Management

NSF Overview: Significant efforts have been, and will continue to be undertaken to facilitate the NSF workforce’s ability to carry out their activities efficiently and effectively. Over the last 18 months, NSF has included Intergovernmental Personnel Act (IPA) employees in its performance management system; developed numerous training courses aimed at administrative professionals, program officers, supervisors, and executives; hired new staff in the Division of Human Resource Management; and improved its relationship with the Office of Personnel Management. NSF has been responding to the OIG Audit of NSF’s Actions to Improve Workforce Management and the Work Environment for Employees, with 38 recommendations completed and 10 underway. The Foundation is developing a plan to respond to the rest of the audit and will submit this plan by the end of calendar year 2011.

<p>a. <i>Continue to enhance leadership and management skills for rotators</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Implemented the first set of performance plans for IPAs serving in Senior Executive Service (SES) positions.</p> <p>Promulgated a mandatory training policy, which requires all new executives, managers and supervisors to take 32 hours of training during their first year, 16 of which must be specific to NSF. Implemented a requirement that, after the first year, at least 16 hours of training must be completed every three years for executives and supervisors.</p> <p>Developed and implemented seven NSF Academy courses aimed at enhancing leadership and management skills for all executives, including rotators: <i>Leadership and Problem Solving Skills; Annual Performance Discussions; Creating and Revising Performance Plans; End of Year Performance Management; Mentoring and Coaching; Mandatory NSF Labor Relations Training for Supervisors and Managers; Performance Training</i>, and <i>Making the Transition to Management</i>; and implemented a course, <i>NSF Becoming a Model EEO Agency: The Role of Managers and Supervisors</i>, in which there was 100 percent participation of all NSF managers and supervisors, inclusive of rotators.</p> <p>Implemented nearly all aspects of the New Executive Transition (NExT) program including an expansive Executive Resources Website, the Executive Leadership Retreat, and the Executive Coaching Program. Piloted a Knowledge Transfer Tool, which is in the process of being integrated into Executive departure and orientation processes.</p> <p>Piloted an Executive Leadership Retreat in March. Based on feedback, revisions were incorporated in the retreats held in June and September, 2011.</p> <p>Administered the OPM Leadership 360™ Assessment to Executive Leadership Retreat participants, Coaching Program participants, and on an ad-hoc basis. Completion of the 360 by 38 NSF Executives. Debriefed Myers-Briggs Type Indicator (MBTI) leadership and management styles to Coaching Program, Executive Leadership Retreat, and Leadership & Problem-Solving Skills participants.</p> <p>Initiated the Executive Coaching Pilot in March and received positive feedback; the Pilot included 16 managers: four new rotators, two seasoned rotators or limited term SES, five relatively new permanent staff and five long-term NSF SES.</p> <p>Developed and distributed a Leadership Development Resources Guide (including internal/external/online training, books, and ideas for stretch assignments) that contains hyperlinks to information, registration and/or content for resources related to all 28 OPM Leadership competencies.</p> <p>Developed an online Executive Development Plan (EDP), which enabled Executives to identify courses that meet Federal training requirements and register for additional leadership training. Implemented in SharePoint, which organized training opportunities by competency, and enabled efficient submission, tracking, and review of EDPs. Launched EDP in September and Executives submitted their EDPs by mid-October.</p>
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	<p>Initiated a pilot mentorship program in the Office of Inspector General, Office of Audit.</p> <p>Issued the call for the first annual appraisals for IPAs serving in SES-level positions; the appraisals are due to the Division of Human Resource Management by October 28, 2011.</p> <p>Initiated administration of OPM’s Federal Competency Assessment Tool (FCAT-M) tool as part of evaluating the effectiveness of the agency’s executive corps.</p> <p>NSF’s Anticipated Next Steps</p> <p>Develop and implement three additional NSF Academy courses aimed at enhancing leadership and management skills: <i>The Art and Science of Picking the Right People</i>, <i>Federal HR Laws and Practices</i>, and <i>Enhancing Your Innovative Potential</i>.</p> <p>Promote use of the Knowledge Management Tool for incoming Executives and completion of the Knowledge Transfer Tool for outgoing Executives.</p> <p>Strongly encourage all new and current executives, both permanent and rotators, to attend the Executive Leadership Retreat, which includes completion of the OPM Leadership 360 Assessment.</p> <p>Provide for current/new executives and leaders to receive executive coaching. Track the completion of Executive Development Plans, review the Plans for compliance with 5 CFR 412.202, and hold executives accountable for submitting a substantive EDP.</p> <p>Implement the NSF-wide mentoring program, currently being piloted, depending on the availability of human resources to maintain this type of program.</p>
<p><i>b. Continue progress in succession planning</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Completed review, by Directorates and Offices, of their succession plans with the Division of Human Resource Management, developing scenarios for key management positions based on internal bench strength and plans for rotator recruitments.</p> <p>Explored the possibility of creating a formal SES candidate development program and determined that the agency will not have the resources to start such a program for the foreseeable future.</p> <p>Maintained a roster of all staff in executive level positions, including Not-To-Exceed dates for rotating employees, for succession planning purposes.</p> <p>Completed several workforce planning related studies including: Office of the Assistant Director, Mathematical and Physical Sciences; Office of International Science and Engineering; National Science Board Office; and the Division of Information Systems. Included in the studies: identification of future staffing needs, management models, full-time equivalent (FTE) requirements, skills/competency needs and in some cases a transition plan for aligning current resources to the future model.</p> <p>NSF’s Anticipated Next Steps</p> <p>Review succession plan policies as part of revising the Human Capital Strategic Plan.</p> <p>Address the effectiveness of the current organizational structure and the impact of limited-term appointments as part of an overall review of executive courses.</p> <p>Continue to develop plans to reduce time-to-hire and avoid significant lag times in filling critical management and program positions as part of the Hiring Reform Action Plan.</p>

	Ongoing discussion of a number of additional workforce planning studies, pending availability of resources.
<p>CHALLENGE: Encouraging the Ethical Conduct of Research</p>	
<p>NSF Overview: The responsible and ethical conduct of research (RCR) is critical for ensuring excellence, as well as public trust, in science and engineering. Consequently, education in RCR is considered essential in the preparation of future scientists and engineers. In response to the America COMPETES Act of 2009 (ACA), each awardee’s Authorized Organizational Representative is required to certify that the institution has a plan to provide appropriate training and relevant oversight in the responsible and ethical conduct of research to undergraduates, graduate students, and postdoctoral researchers who will be supported by NSF to conduct research. NSF’s implementation strategy includes dissemination through in-reach and outreach activities to NSF staff, as well as U.S. and international scientific research and education communities; policy guidance; incorporation into program funding opportunities; and development of resources (e.g., curriculum materials, online forums, and best practice white papers) to enhance the quality of such training provided by the grantee community.</p>	
<p><i>a. Strengthen understanding and adherence to standards</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Initiated definitive steps to ensure that (as part of the NSF response to the ACA) the science and engineering communities have resources to train students and postdoctoral fellows to make informed, ethical, responsible decisions in research projects and professional practices.</p> <p>Presentation by Head, Policy Office, on NSF’s implementation of the ACA’s RCR provision at the National Council of University Research Administrators (NCURA) Annual Conference, which was one-of-five sessions webcast throughout the country to ensure broad access to this information to NCURA membership.</p> <p>Continued to include RCR coverage in outreach materials; presented this information at a number of research administration conferences.</p> <p>Included a case study on international research integrity in NSF Program Managers Seminars.</p> <p>Included information in RCR training and awareness of international research integrity issues at the East Asia and Pacific Summer Institutes student orientation.</p> <p>Revised OISE’s in-reach and outreach presentations to include RCR and international research integrity.</p> <p>NSF’s Anticipated Next Steps</p> <p>Continue to emphasize importance of RCR in in-reach and outreach opportunities with NSF staff, as well as U.S. and international scientific research and education communities.</p> <p>Continue development of online resources to include instructional materials, forums, encyclopedia entries, and best practices (see www.nationalethicscenter.org), under a 5-year, \$5 million award (NSF-1045412) made in FY 2010 to the University of Illinois at Urbana-Champaign to develop a national online center for professional/research ethics in science, mathematics and engineering.</p>
<p><i>b. Continue efforts to further the research integrity framework</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Issued an internal compendium of policies and practices for “international collaborative oversight” that included the oversight guidance for proposals that entail international engagements, e.g., incorporated additional review criteria addressing: true intellectual collaboration; mutual benefits/benefits realized from the expertise/specialized skills of the international counterpart; and research engagement of U.S. students/early-career researchers.</p> <p>Issued the OISE Partnerships for International Research and Education Solicitation (NSF 11-564), which incorporated specific language on international research integrity and international collaborative oversight; e.g., adherence to common principles for the responsible conduct of research and misconduct (NSF International Research Integrity http://www.nsf.gov/od/oise/intl-research-integrity.jsp; NIH</p>

	<p>Fogarty International Center materials http://bms.brown.edu/fogarty/codes.htm); compliance with regulations for the use of recombinant DNA, microbes, transgenic plants or animals/vertebrate animals; and compliance with regulations relating to the U.S. Agricultural Bioterrorism Act of 2002 (http://www.aphis.usda.gov/programs/ag_selectagent/).</p> <p>Incorporated RCR training in the Second Call for Proposals of the G8 Multilateral Funding Initiative.</p> <p>Participation by OISE in the Ethics Education in Science and Engineering program (NSF 11-514); funded one award (OISE-1135345), “<i>Modeling Effective Research Ethics Education in Graduate International Collaboration: A Learning Outcomes Approach</i>”.</p> <p>Organized two International Research Integrity seminars with visitors from Brazil and Bolivia and arranged meetings for visitors from Australia and Hong Kong to meet with NSF and OISE staff about RCR in their countries.</p> <p>Provided travel support for U.S. participation in the <i>First Brazilian Meeting on Research Integrity, Science and Publication Ethics</i> and facilitated participation of the Inter-American Institute for Global Change Research, an intergovernmental organization funded by NSF and headquartered in Brazil.</p>
	<p>NSF’s Anticipated Next Steps</p> <p>Continue to monitor the implementation of RCR requirements under NSF programs to improve clarity of policies and procedures; expand resources available to the field; and strengthen in-reach and outreach efforts.</p>
<p>CHALLENGE: Effectively Managing Large Facilities and Instruments</p>	
<p>NSF Overview: The Foundation continues to exercise and strengthen agency-wide management and oversight policies and practices for its large facilities and instruments in planning, construction, and operation. These activities are carried out via the decisional and governing responsibilities of the Office of Director and the National Science Board, respectively, and through the management and oversight responsibilities of the sponsoring Science and Engineering Program Directorates and Offices and the NSF Chief Financial Officer (CFO), Office of Budget, Finance and Award Management (BFA). Within BFA, the CFO relies on the Large Facilities Office (LFO) to develop policy related to large facilities, to advise NSF management on large facility issues, and to coordinate with and advise Programs on large facility management and oversight. Other BFA units, including the Budget Division and Cooperative Support Branch, are engaged in budget development, and in award development and monitoring related to large facilities.</p>	
<p><i>Oversight and management of projects to ensure that they are meeting performance expectations and assessing the performance of awardees</i></p>	<p>NSF’s Significant Actions Taken in FY 2011</p> <p>Ensured that projects, including Recovery Act-funded projects were on time, on budget, and meeting performance expectations; for example: (1) participated in construction reviews for the Alaska Region Research Vessel and the Ocean Observatories Initiative; (2) executed a Final Design Review and Construction Readiness Review for the National Ecological Observatory Network (NEON), and a construction review of Advanced Laser Interferometer Gravitational Wave Observatory (LIGO) project; and (3) continued the NSF programs/LFO established practices for regular monitoring of all open MREFC construction projects.</p> <p>Assessed performance of awardees by conducting Business Systems Reviews (BSR) and related post-BSR monitoring activities. Completed BSRs on Cornell High Energy Synchrotron Source (CHESS), Network for Earthquake Engineering Simulation (NEES), and Alaska Research Vessel Sikuliaq. Continued post-BSR monitoring on EarthScope.</p> <p>Continued discussions on funding of contingencies under the cooperative agreement to the Consortium for Ocean Leadership (COL). Continued to work with OIG to explore the contingency issue raised by the OIG.</p> <p>Continued review of NSF’s policies and processes regarding contingency allocation and oversight for large facility projects.</p>

	<p>NSF's Anticipated Next Steps</p> <p>Planning by LFO and programs for the Preliminary Design Review for the Large Synoptic Survey Telescope.</p> <p>Continue planning for BSRs for FY 2012, which may include the National Radio Astronomy Observatory (NRAO) - Atacama Large Millimeter Array (ALMA), the National Optical Astronomy Observatory (NOAO) - National Solar Observatory (NSO), National Nanotechnology Infrastructure Network (NNIN), and/or Ocean Observatories Initiative (OOI).</p> <p>Initiate post-BSR monitoring as needed/continue monitoring EarthScope, NEON, and the Alaska Research Vessel Sikuliaq.</p> <p>Update the <i>Large Facilities Manual</i> module on Contingency Policy and Procedures.</p> <p>Assist awardees and program staff to assure standards of adequacy are satisfied in the provision of supporting documentation for all award costs, to facilitate examination of whether certain proposal costs are appropriate for classification as contingency type items.</p>
<p>EMERGING CHALLENGE: Implementing the Open Government Directive (OGD)</p> <p>NSF Overview: In December 2009, OMB issued a memorandum calling for federal agencies to create agency specific open government plans highlighting agency response to administration interests in transparency, participation, and collaboration. The memorandum identified a series of milestones consistent with those goals, and required agencies to identify explicit actions being taken in the area of transparency, participation, and collaboration. NSF has met each of the required milestones and continues to seek opportunities to further open government.</p>	
<p><i>a. Describe NSF activities in the area of Prizes/Challenges and the NSF Open Government Flagship activity</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Explored promising prize/challenge candidates, which included: CISE Ignite; CISE/ENG Robotics; BIO Hand-writing recognition; and a CISE/ENG commercialization challenge.</p> <p>Announced the Office of Legislative and Public Affairs (OLPA) graphics visualization challenge (e.g., recognition prize, non-monetary).</p> <p>Worked with the Office of Science and Technology Policy (OSTP) on a potential NSF Flagship involving research on the efficacy of the open government activity, and held a workshop with OSTP to promote this concept.</p> <hr/> <p>NSF's Anticipated Next Steps</p> <p>Continue working with the Directorates/Offices in issuing NSF mission related prizes/challenges.</p> <p>Re-define the NSF OGD Flagship activity; a flagship activity along the lines of research in open government has not resulted in any research proposals in that area.</p> <p>Continue exploring open data access as NSF flagship initiative because of its importance to the scientific community.</p>
<p><i>b. Reconcile interests of researchers with right of the public to have access to taxpayer funded information</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Created a Data Task Force to explore issues of open data access.</p> <p>Required a Data Management Plan be included in proposals submitted to the Foundation.</p> <p>Conducted Data Work Group meetings to explore the various tensions involved in open data access, rights of the research community, interests of the publishing community and international concerns.</p>

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	<p>NSF's Anticipated Next Steps</p> <p>Mine Data Management Plans to look for promising solutions that would enable the community to provide innovative ways to make data available.</p> <p>Publish the Data Task Force findings in FY 2012, via the National Science Board.</p> <p>Create a Math and Physical Sciences work group to explore specific data access challenges and how they might best be addressed.</p>
<p><i>c. Adequate staffing to maintain NSF's commitment to the Open Government Directive</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Maintained the NSF Open Government Plan and released the NSF Open Government Work Group's promised datasets to the public via data.gov.</p> <p>Identified the Chief Technology Officer (CTO) as the Foundation's Senior Accountable Official (SAO) for open government in 2010; the CTO continued to serve in that capacity.</p> <p>Continued participation in the Federal government-wide Open Government Work Group.</p> <p>Worked with Directorates/Offices to identify NSF Prizes/Challenges consistent with the NSF mission.</p> <p>NSF's Anticipated Next Steps</p> <p>Update the NSF Open Government Plan, dated October 2010, to reflect the NSF Strategic Plan FY 2011-2016.</p> <p>Conduct the Foundation's open government self-assessment.</p> <p>Announce the first NSF Directorate/Office Prize/Challenge.</p>
<p>EMERGING CHALLENGE: Planning for the Next NSF Headquarters</p> <p>NSF Overview: The Foundation's lease will expire in 2013 and efforts are underway to secure a new lease in the current space or at a new facility. As part of this Future NSF (FNSF) initiative, NSF is collaborating with the General Services Administration (GSA) in the following areas: prospectus development, congressional authorization, lease procurement, design, construction, and occupancy. Initial Market Research, existing building evaluations, initial budget development and acquisition strategies and prospectus approval and submission to Congress were achieved during the FY 2009 and FY 2010 cycles. The FY 2012 Budget Request is under consideration by Congress; the Solicitation for Offers is expected to be issued by GSA this calendar year.</p>	
<p><i>Planning for headquarters facilities that meet NSF's future needs</i></p>	<p>NSF's Significant Actions Taken in FY 2011</p> <p>Awarded a five-year competitive procurement for Technical Support Services, which included project management, architecture and engineering services, technology project management, relocation services, communications and budget support.</p> <p>Integrated six full-time contractor staff onto the FNSF project team.</p> <p>Successfully defended and coordinated the approval of the NSF Prospectus and FY 2012 FNSF Budget request through OMB.</p> <p>Successfully coordinated the submission of the NSF Prospectus to GSA Congressional committees.</p> <p>Conducted 16 NSF Program of Requirements validation meetings on all special mission-related space.</p> <p>Briefed status to the National Science Board, NSF Office of the Director, Deputy Assistant Directors/Executive Officers, FNSF Executive Advisory Group, AFGU Union, NSF Administrative Managers Group, and select internal stakeholder offices.</p> <p>Hosted approximately 30 GSA Solicitation for Offers development sessions. Completed final draft of criteria, terms and conditions for</p>

Appendix 3B: NSF FY 2011 Progress Report on OIG Management Challenges

	<p>NSF and GSA legal, procurement, and executive review.</p> <p>Assisted GSA with the issuance of the Expressions of Interest, and then participated in the review and follow up.</p> <p>Completed a draft of the NSF Master Project Schedule and NSF/GSA Occupancy Agreement.</p> <p>Completed NSF Phase I relocation planning space walk-through assessments.</p> <p>Developed detailed Future NSF HQs cost requirements and justification for inclusion in the FY 2013 budget submission to OMB.</p> <p>NSF's Anticipated Next Steps</p> <p>Further evaluate cost-reduction opportunities for NSF space program in existing or new building.</p> <p>Future NSF procurement to be released through GSA.</p> <p>Prospectus approval via GSA committees.</p> <p>Participate in evaluating offers received, negotiations, and award of a new lease.</p> <p>Coordinate anticipated technology, NSF operations and process planning.</p> <p>Design and begin NSF pilot projects.</p>
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Undisbursed Balances in Expired Grant Accounts

The National Science Foundation (NSF) funds research and education in science and engineering through grants and cooperative agreements to 1,875 colleges and universities and other institutions. NSF grants are funded in one of two ways. The grant may be funded fully at the time of award. This is called a standard grant. Alternatively, the grant may be funded incrementally, one year at a time. This is called a continuing grant increment. In both cases, all costs on the grant must be incurred by the college, university or institution during the term of the grant period. At NSF, grantees typically have one full quarter to report final expenditures after the grant expires. Once final disbursements are submitted, grant close-out procedures begin.

For NSF's research accounts—Research and Related Activities (R&RA) and Education and Human Resources (EHR)—Congress provides NSF two years to obligate these funds and, per Federal appropriations law (31 U.S.C. 1553), the funds remain available to the awardee for five years after the appropriation expires to liquidate (or spend) these obligated funds. After this five-year period, the source appropriation is no longer available to make disbursements to the grantee.

The different phases of an appropriation's life cycle are documented in Section 20.4 (c) of OMB Circular A-11, *Preparation, Submission, and Execution of the Budget*. The active phase of an appropriation represents the period of time in which the appropriation is available to incur new obligations. The expired phase "lasts for five years after the last unexpired year unless the expiration period has been lengthened by legislation." During the expired phase, agencies "may not incur new obligations against expired budget authority, but you may liquidate existing obligations by making disbursements." In the canceled phase, funds are no longer available to the agency for any purpose and are transferred to "miscellaneous receipts" in the U.S. Treasury.

The following information is provided in accordance with Section 537 of the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2010, of the Consolidated Appropriations Act (Pub. Law 111-117). The responses pertain to the agency's two grant-making appropriation accounts: R&RA and EHR. The data reported are based on the following definitions:

- An **expired grant** is a grant award whose period of performance has expired. Once a grant has expired, NSF takes actions to close-out the grant both administratively and financially.
- **Undisbursed balances on expired grants** represent the amounts de-obligated off of expired grant awards after the grantee reports its final expenditures using the Federal Financial Report process and after NSF makes the final disbursements to the college or university.

When a grant is closed out during the active and expired phases of the source appropriation, the undisbursed balances are returned to the NSF and are available for other legitimate financial purposes. When a grant is closed out during the canceled phase of the source appropriation, the undisbursed balances are returned to NSF for deposit as "miscellaneous receipts" in the U.S. Treasury.

The methodology followed to report undisbursed balances on expired grant awards complies with guidance provided by the Controller of the White House Office of Management and Budget (OMB), received on August 25, 2011. However, the methodology used this year is different from that used in our FY 2010 Agency Financial Report. The data reported in FY 2010 reflected undisbursed balances associated with expired R&RA and EHR appropriations, rather than undisbursed balances resulting solely from expired grants. The data reported in the FY 2011 report represents undisbursed balances associated

with expired grants. Undisbursed balances resulting from expired grants are a subset of undisbursed balances associated with expired appropriation accounts.

The change in NSF's approach to responding to the requirements in Section 537 of P.L. 111-117 reflects NSF's new interpretation of the OMB reporting guidance, and is based on additional clarifying information provided by the Government Accountability Office (GAO) as part of its engagement with NSF in August 2011. The GAO's engagement on this matter is on behalf of a request from the Chairman, Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security; Senate Committee on Homeland Security and Governmental Affairs and the Ranking Member, Permanent Subcommittee on Investigations; Senate Committee on Homeland Security and Governmental Affairs.

1. Details on future action the department, agency, or instrumentality will take to resolve undisbursed balances in expired grant accounts.

NSF continually monitors its grant awards throughout their lifecycle following a documented and comprehensive post-award monitoring process. This includes requiring all grant recipients to report financial expenditures on a quarterly basis using the Federal Financial Report (FFR) process. NSF grants are closed based on their period of performance end date. One quarter after the grant period has expired, all unliquidated (or undisbursed) funds are de-obligated. Having small undisbursed balances at the end of the grant period is a routine occurrence, as not all grantees fully spend all of the funds obligated in the course of their research.

2. The method that the department, agency or instrumentality uses to track undisbursed balances in expired grant accounts.

NSF completes financial close-out of expired grant awards on a quarterly basis using a well established set of automated and manual activities. Eligibility for close-out for all NSF awards begins one full quarter after the award expiration date. At the start of each quarter the NSF Financial Accounting System (FAS) automatically flags all eligible awards to close when the programmed award close-out process is run. This process is configured so that the default setting within FAS is for all eligible awards to financially close. The FAS close-out process automatically de-obligates any un-liquidated (unspent) award balance, produces an award close-out transaction to flag the award as closed, and sends the financial close-out date to the NSF award management system. This initiates final administrative close-out procedures in the award management system.

Standard quarterly award monitoring activities provide a means for NSF award financial managers or grant awardees to hold expiring awards open for one additional quarter. During the last month of each quarter, NSF award financial managers monitor the award financial close-out process using pre-defined reports and queries from the FAS database. Grants in the first quarter of close-out eligibility that have large un-liquidated balances are reviewed before the Award Close procedure is run at the end of the month. As part of this review, the NSF award financial manager can identify awards that need to be held open for an additional quarter. Grant awardees monitor the financial close-out process through the quarterly Federal Financial Report (FFR) process. All awards eligible for close-out are highlighted on the FFR. Each quarter, awardees have the option to hold an award open for one additional quarter. This "hold open" action is requested on the FFR and prevents the award from being financially closed-out during the mass close-out process. All awards that are held open during one quarter automatically become re-eligible for close-out for the next quarter.

In rare instances, NSF monitoring processes reveal awards in the second quarter of close-out eligibility that still have large unliquidated balances. NSF award financial managers closely monitor these awards

Appendix 4: Undisbursed Balances in Expired Grant Accounts

in cooperation with the Program Division Directors (DD), Administrative Officers (AO), Program Managers, and Grants Officials. The vast majority of these awards are closed after the second quarter of close-out eligibility. A written justification is required for all awards being held open beyond the second quarter of close-out eligibility.

3. Identification of undisbursed balances in expired grant accounts that may be returned to the Treasury of the United States.

When a grant is closed out, the unliquidated (or undisbursed) balances are de-obligated. Once these balances are de-obligated from the grant, no additional disbursements on the grant can be made. The de-obligated grant balances are treated one of three ways. If the source appropriation is still active, the balances are recovered by NSF and remain available for valid new obligations until the source appropriation's expiration date. If the source appropriation has expired, but funds have not yet been canceled, the grant balances are recovered by NSF and remain available for upward adjustments on other existing obligations within the source appropriation. If the source appropriation has been canceled, the grant balances are returned to the Treasury. The amount of undisbursed balances from expired grants that were returned to Treasury in each of the three preceding years is provided in the highlighted cells in Tables 1, 2, and 3, under the column "Grants Funded by Appropriations that Cancel at Year-end" on the next page.

4. In the preceding three fiscal years, details on the total number of expired grant accounts with undisbursed balances (on the first day for each fiscal year) for the department, agency, or instrumentality and the total finances that have not been obligated to specific project remaining in the accounts

The number of grants that expired during the preceding three fiscal years is provided in Tables 1, 2 and 3 on the next page. This table also provides the total undisbursed balances recovered from each of these expired grants and the amounts that are no longer obligated. This information represents grant numbers and undisbursed balances for grants that were funded with appropriations that are now in the "expired and canceled phase."

Appendix 4: Undisbursed Balances in Expired Grant Accounts

Table 1 Status of Expired Grants (FY 2011)		
FY 2011 (as of 9/30/11)	Grants Funded by Expired Appropriations	Grants Funded by Appropriations that Cancel at Year-end
Number of grants closed out (expired)	16,626	2,022
Undisbursed balances recovered: Unobligated, but remain available for adjustments to existing obligations	\$35,204,328	N/A
Undisbursed balances recovered: Unobligated, canceled and returned to Treasury	N/A	\$5,610,546

Table 2 Status of Expired Grants (FY 2010)		
FY 2010 (as of 9/30/10)	Grants Funded by Expired Appropriations	Grants Funded by Appropriations that Cancel at Year-end
Number of grants closed out (expired)	16,403	2,129
Undisbursed balances recovered: Unobligated, but remain available for adjustments to existing obligations	\$30,908,148	N/A
Undisbursed balances recovered: Unobligated, canceled and returned to Treasury	N/A	\$5,411,704

Table 3 Status of Expired Grants (FY 2009)		
FY 2009 (as of 9/30/09)	Grants Funded by Expired Appropriations	Grants Funded by Appropriations that Cancel at Year-end
Number of grants closed out (expired)	16,419	2,042
Undisbursed balances recovered: Unobligated, but remain available for adjustments to existing obligations	\$33,177,414	N/A
Undisbursed balances recovered: Unobligated, canceled and returned to Treasury	N/A	\$8,042,652

Patents and Inventions Resulting From NSF Support

The following information about inventions is being reported in compliance with Section 3(f) of the National Science Foundation Act of 1950, as amended [42 U.S.C. 1862(f)]. There were 1,440 NSF invention disclosures reported to the Foundation either directly or through NIH's iEdison database during FY 2011. Rights to these inventions were allocated in accordance with Chapter 18 of Title 35 of the United States Code, commonly called the "Bayh-Dole Act."

Acronyms

AFR	Annual Financial Report	FMFIA	Federal Managers Financial Integrity Act of 1982
AMBAP	Award Monitoring and Business Assistance Program	FISMA	Federal Information Security Management Act
AOAM	Agency Operations and Award Management	FMFIA	Federal Financial Management Improvement Act of 1996
APIC	Accountability and Performance Integration Council	FTE	Full Time Equivalent
APR	Annual Performance Report	FY	Fiscal Year
ARI	Academic Research Infrastructure	GAAP	Generally Accepted Accounting Principles
ARRA	American Recovery and Reinvestment Act of 2009	GAO	Government Accountability Office
ARRV	Alaska Region Research Vessel	GATB	Government Accountability and Transparency Board
ATST	Advanced Technology Solar Telescope	GPRA	Government Performance and Results Act
BIO	Directorate for Biological Sciences	GSA	Government Services Administration
BSR	Business Systems Review	ICASS	International Cooperative Administrative Support Services
CAP	Corrective Action Plan	I-Corps	NSF Innovation Corps
CFI21	Cyberinfrastructure Framework for 21st Century Science and Engineering	IG	Inspector General
CFO	Chief Financial Officer	IPA	Intergovernmental Personnel Act
CFR	Code of Federal Regulations	IPERA	Improper Payments Elimination and Recovery Act of 2010
CHES	Cornell High Energy Synchrotron Source	IPIA	Improper Payments Information Act of 2002
CIA	Cost Incurred Audit	IT	Information Technology
CIP	Construction-In-Progress	K-12	Kindergarten to Grade 12
CISE	Directorate for Computer and Information Science and Engineering	MD&A	Management's Discussion and Analysis
CMIA	Cash Management Improvement Act	MOU	Memorandum of Understanding
COO	Chief Operating Officers	MREFC	Major Research Equipment and Facilities Construction
COTS	Commercial Off-the-Shelf	MRI	Major Research Instrumentation
COV	Committee of Visitors	MSP	Math and Science Partnership
CHES	Cornell High Energy Synchrotron Source	NEES	Network for Earthquake Engineering Simulation
CSEMS	Computer Science, Engineering, and Mathematics Scholarship Program	NIH	National Institutes of Health
DCAA	Defense Contract Audit Agency	NSB	National Science Board
DOL	Department of Labor	NSF	National Science Foundation
EHR	Directorate for Education and Human Resources	OGD	Open Government Directive
EEO	Equal Employment Opportunity	OIG	Office of Inspector General
EEOC	Equal Employment Opportunity Commission	OLPA	Office of Legislative and Public Affairs
EIS	Enterprise Information System	OMB	Office of Management and Budget
ENG	Directorate for Engineering	OOI	Ocean Observatories Initiative
FAS	Financial Accounting System	OPM	Office of Personnel Management
FASAB	Federal Accounting Standards Advisory Board	OPP	Office of Polar Programs
FBWT	Fund Balance with Treasury	PL	Public Law
FCTR	Federal Cash Transaction Report	PMC	President's Management Council
FECA	Federal Employees' Compensation Act	PP&E	Property, Plant, and Equipment
FMFIA	Federal Financial Management Improvement Act of 1996	RATB	Recovery Accountability and Transparency Board
FFR	Federal Financial Report	R&RA	Research and Related Activities
FFRDC	Federally Funded Research and Development Center	RPSC	Raytheon Polar Services Company

R/V	Research Vessel
SBR	Statement of Budgetary Resources
SEES	Science, Engineering, and Education for Sustainability
SFFAS	Statements of Federal Financial Accounting Standards
SGL	Standard General Ledger
STAR METRICS	Science and Technology for America's Reinvestment: Measuring the Effect of Research on Innovation, Competitiveness, and Science
STEM	Science, Technology, Engineering, and Mathematics
TAFS	Treasury Appropriation Fund Symbol
USAP	U.S. Antarctic Program
USC	United States Code