

**STATEMENT OF ALLISON C. LERNER**

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**NATIONAL SCIENCE FOUNDATION**

**Before the**

**U.S Senate Committee on Commerce, Science & Transportation**

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Mr. Chairman and Members of the Committee, I appreciate this opportunity to discuss the Office of Inspector General's (OIG) work to promote the efficiency and effectiveness of the National Science Foundation's (NSF) programs and operations and to safeguard their integrity. My office is committed to providing rigorous, independent oversight of NSF, and I welcome the chance to discuss some of the top management challenges facing the Foundation, NSF's progress in addressing these challenges, and work that remains to further advance accountability and transparency at NSF.

**Background**

NSF is an independent federal agency and the funding source for approximately 24 percent of all federally supported basic research conducted by the nation's colleges and universities. In many areas, such as mathematics and computer science, NSF is the major source of federal backing. The Foundation funds approximately 12,000 new awards each year, thereby fulfilling its mission to promote the progress of science. Proposals for funding are assessed by panels of experts as part of NSF's merit review process.

Awards are made primarily as grants to individuals and small groups of investigators, as well as to research centers and facilities where scientists, engineers, and students undertake research projects. The Foundation also uses cooperative agreements and contracts to fund major research equipment such as telescopes, Antarctic research sites, and high-end computer facilities. In FY 2016 NSF was appropriated approximately \$7.5 billion to carry out the Foundation's programs and operations.

The OIG is independent from NSF and reports directly to Congress and the National Science Board (NSB). Our mission is to conduct independent and objective audits, inspections, reviews and investigations of National Science Foundation programs and operations, and to recommend policies and corrective actions to promote effectiveness and efficiency and prevent and detect waste, fraud, and abuse. Consistent with our statutory mandate, the OIG has an oversight role and does not determine policy or engage in management activities involving the Foundation or program operations. Thus, my office is not responsible for managing any NSF programs, nor do we attempt to assess the scientific merit of research funded by the Foundation.

The OIG has two main components: the Office of Audit and the Office of Investigations. The Office of Audit is responsible for auditing NSF's internal operations, as well as the grants, contracts, and cooperative agreements funded by the Foundation. Among its ongoing responsibilities are the annual audits of NSF's financial statements and the annual reviews of NSF's information system security program.

Through our audit work, we are able to monitor management functions that may pose significant financial or programmatic risks to the Foundation. In determining priorities for this work, we consider the results of prior audits and consult with the Foundation's senior management, the National Science Board and Congress, the Office of Management and Budget, and members of the research community supported by the Foundation. In selecting areas for audit, we assess factors such as the risk involved in the activity, the potential for monetary recovery for the government, and the potential for the greatest substantive benefit for NSF.

The Office of Investigations (OI) is responsible for investigating allegations of wrongdoing involving NSF programs and operations, agency personnel, and organizations or individuals who submit proposals to, receive awards from, or conduct business with NSF. OI also houses a team of investigative scientists responsible for investigating allegations of fabrication, falsification or plagiarism in NSF-funded research. We focus our investigative resources on the most serious cases, as measured by such factors as the amount of money involved, the seriousness of the alleged criminal, civil or ethical violations, and the strength of the evidence. When appropriate, the results of these investigations are referred to the Department of Justice for possible criminal prosecution or civil litigation, or to NSF for administrative resolution.

### **NSF's Top Management Challenges**

In accordance with the Reports Consolidation Act of 2000, each year the OIG identifies what it considers to be the most serious management and performance challenges facing NSF. The top management challenges reflect fundamental program risk that are likely to require NSF's attention for years to come.

The OIG identified seven challenges for NSF for FY 2017. My testimony will focus on four of NSF's most pressing challenges: management of cooperative agreements for large facility research projects, management of the Intergovernmental Personnel Act program, management of the U.S. Antarctic Program, and improving grant administration. I will also briefly discuss risks associated with NSF's move to its new building, which is scheduled to begin toward the end of this fiscal year.

#### **Management of Cooperative Agreements for Large Facility Research Projects**

NSF uses cooperative agreements to construct and operate its most costly and highest risk research facilities. As of January 25, 2017, NSF had 459 active cooperative agreements, totaling nearly \$8 billion. Twenty-two of these agreements are valued at over \$50 million each and add up to cumulatively to more than \$4.4 billion.

Since 2010, my office has issued 28 reports containing more than 80 recommendations related to NSF's use and management of cooperative agreements for the construction and operation of its

high-dollar, high-risk research facilities. Monitoring of cooperative agreements was also cited as a significant deficiency in NSF's financial statement audits for fiscal years 2011 through 2015.

In addition to OIG's oversight, in the spring of 2015, at the request of the NSF Director and the National Science Board, the National Academy of Public Administration (NAPA) examined NSF's use of cooperative agreements for large facilities and benchmarked its practices against other, similar Federal agencies.

NAPA issued its report in December 2015. That document articulated the fundamental challenge that NSF is facing:

It is clear that, in the past, NSF has prioritized the innovative scientific aspects of large facility construction projects; the agency now needs to apply equal emphasis on increased internal management of the business practices critical to enhanced oversight and project success. In doing so, the Panel believes that NSF and NSB will enhance the agency's ability to fulfill its mission of supporting groundbreaking science.<sup>1</sup>

The need for stronger oversight of large cooperative agreements begins before the award has been made. Pre-award oversight should include audits of proposed budgets and accounting systems to ensure that awardees' cost estimates are fair and reasonable and that their accounting systems are adequate to bill the government properly. Pre-award oversight is especially important as the proposed budget for these projects, once approved by NSF, creates the basis upon which awardees can draw down advanced funds over the course of the award.

The importance of pre-award oversight was underscored by the results of audits of three of NSF's large facility projects—the Ocean Observatories Initiative (OOI), the Daniel K. Inouye Solar Telescope (DKIST)<sup>2</sup>, and the National Ecological Observatory Network (NEON). As a result of those jobs, auditors questioned \$305 million in unallowable or unsupported costs out of \$1.1 billion in total costs for the three projects.

The lack of support for costs in the \$469.3 million NEON proposal was so significant that the auditors issued an adverse opinion stating the proposal did not form an acceptable basis for negotiation of a fair and reasonable price. Auditors disclaimed an opinion on the DKIST proposal, concluding that cost data provided in the pre-award cost proposal for the \$344 million project was so significantly flawed that they were unable to perform an audit. Based on these audits, we recommended that prior to making an award NSF obtain proposal and accounting system audits for high risk cooperative agreements valued in excess of \$50 million. The NAPA report also recommended that NSF address potential cost proposal issues before making an award.

The serious questions about the adequacy of the proposed budgets led us to examine NSF's cost surveillance throughout the lifecycle of large facility projects. Adequate oversight is essential

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<sup>1</sup> *National Science Foundation: Use of Cooperative Agreements to Support Large Scale Investment in Research*, National Academy of Public Administration (December 2015), pp. 6-7.

<sup>2</sup> Formerly known as the Advanced Technology Solar Telescope.

after the award is made to ensure that expenditures are consistent with the award's terms and conditions. To this end, we have recommended that NSF obtain incurred cost submissions and incurred cost audits of high risk cooperative agreements valued in excess of \$50 million. Such submissions and audits will enable NSF to determine if costs claimed are reasonable and allowable under federal requirements.

Proper oversight also includes validating the information awardees provide in Earned Value Management (EVM) reports and certifying the EVM systems used to track project schedule and cost. Our work has identified opportunities for improvement in this area. For example, monthly EVM progress reports for the NEON project were not accurate, which undermined NSF's ability to promptly identify problems that ultimately led to NSF having to significantly de-scope the project to avoid an \$80 million cost overrun.

We are currently broadening our work in this area to encompass cooperative agreements for the operations phase of large facility projects. Over time, NSF spends significantly more on operating its facilities than it does on constructing them. To illustrate, NSF requested over \$193 million for fiscal year 2017 to pay for four NSF large facility construction projects. In contrast, NSF's operation and maintenance request for its existing large facilities for the same time period exceeded \$1 billion, in addition to more than \$200 million for Federally Funded Research and Development Centers. We have just begun a job focusing on the risk of potential commingling of construction and operations funds.

NSF has developed new policies and procedures for large facility awards to address some OIG and NAPA recommendations. Among other things, NSF's new guidance requires completion of a Cost Proposal Review Document (CPRD) for each large facility proposal to ensure that a thorough and well-documented record exists of NSF's determination that proposed costs are reasonable. The CPRD is NSF's analysis of whether an awardee's proposed costs are supported adequately and describes NSF's plans for oversight of the award.

In addition, according to NSF's new guidance, the Grants and Agreements Officer must determine that a project's estimated costs are reasonable prior to making a construction award for a facility. NSF has also instituted a new management fee policy, as well as implementing guidance, to strengthen its oversight over awardees' use of management fee.

These new policies represent important steps by NSF toward the goal of increased accountability over the Foundation's largest and riskiest projects. As a result of these actions, NSF's most recent financial statement audit removed a multi-year significant deficiency focused on NSF's monitoring of large cooperative agreements. While these outcomes reflect real progress on this important issue, we will continue to monitor this area because of the unique challenges it poses to the Foundation.

Based on the serious nature of these challenges and the progress that has been made to date, our objective moving forward is to examine how NSF is applying its new policies to strengthen accountability for both construction and operations awards from the pre-award stage through the lifecycle of the award. Implementing these new policies will require sustained management

attention, effective communication with the awardee community, clear award terms and conditions, and most importantly, a continuing commitment to change culture at NSF.

We will also pay close attention to the actions NSF takes in response to requirements in the *American Innovation and Competitiveness Act*. The Act contains a number of key oversight requirements related to NSF's large facility portfolio. For instance, it requires NSF to conduct a pre-award analysis of costs before making an award, obtain periodic external reviews on project management and performance, retain control over funds budgeted for contingency, and to establish guidelines regarding inappropriate expenditures associated with all fee types.

#### *Management of the Intergovernmental Personnel Program*

To further the agency's mission of supporting science and engineering research and education, NSF draws on scientists, engineers, and educators on rotational assignment from academia, industry, or other eligible organizations. All of the non-permanent appointments are federal employees with the exception of those who come to NSF under Intergovernmental Personnel Act (IPA) assignments. Individuals on IPA appointments remain employees of their home institutions. As a result, pay and benefits for IPAs are set by their home institutions and are not subject to limitations on federal pay and benefits.

While there are benefits that come from having IPAs at NSF, there are also challenges. For example, since IPAs can serve in a temporary capacity for up to four years, there is significant turnover in staff at NSF, especially in executive positions charged with leading the Foundation and setting its vision. As of December 2016, five of the seven Assistant Directors, whose primary responsibility is providing leadership and direction to the Foundation's scientific directorates, are IPAs (one Assistant Director slot is vacant). In addition, as of the same date, 20 out of NSF's 29 scientific divisions are led by IPAs (2 of those positions are vacant).

The Foundation's use of IPAs comes at a high cost and these costs are rising. In 2015, NSF paid nearly \$8.9 million<sup>3</sup> for 27 executive-level IPAs, compared to \$6.5 million for the same expenses for 21 executive-level IPAs in 2012. IPA salaries can also significantly exceed the salaries of the highest paid federal employees. In 2015 the highest executive-level IPA salary was more than \$440,000, up 45 percent from \$301,247 in 2012. In 2015 the salaries for all but two executive level IPAs were more than the highest salary of a federal employee at NSF. The number of IPAs has also increased--in 2009, there were 20 executive-level IPAs, whereas there were 29 executive-level IPAs in December 2016.

Since 2010, we have recommended that NSF evaluate ways to reduce IPA costs and have suggested, among other things, that the Foundation consider expanding the use of telework and seek greater cost sharing from IPAs' home institutions. Because IPA salaries and benefits are

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<sup>3</sup> Includes salary, fringe benefits, lost consulting, and per diem.

funded with program-related appropriations, savings in IPA costs would free up funds for additional research.

In response to our recommendations NSF no longer reimburses IPAs for lost consulting income; previously IPAs could receive up to \$10,000 from NSF each year for consulting income they received while at their institutions. NSF also formed a steering committee in April 2016 to explore opportunities to reduce IPA costs. To this end, NSF has indicated that it will pilot a required 10 percent cost sharing of IPAs' academic-year salary and fringe benefits in FY 2017.

Moving forward, we will monitor NSF's actions in response to our recommendations on this topic. We will also examine NSF's actions in response to the *American Innovation and Competitiveness Act*, which required the Foundation to report on its efforts to cut costs associated with employing IPAs.

### Management of the U.S. Antarctic Program

NSF, through the United States Antarctic Program (USAP), manages U.S. scientific research in Antarctica. In December 2011, NSF awarded an Antarctic Support Contract to Lockheed Martin to support NSF's management of the USAP.<sup>4</sup> The contract is NSF's largest, valued at nearly \$2 billion over 13 years. The Antarctic Support Contract and its subcontracts provide logistical support for information technology, food, laboratory management, and other services which enable the USAP's three research stations (McMurdo, South Pole, and Palmer) to operate year-round.

We have previously examined NSF's response to a July 2012 Blue Ribbon Panel report and suggested that including more specific information, such as interim milestones and target dates for implementing actions, would enhance NSF's ability to prioritize and track its corrective actions in response to the Panel report. Given the large number of action items associated with the Panel recommendations—the panel identified 84 implementing actions within three separate categories--there is a real risk that NSF could lose track of its progress with respect to these actions unless it approaches implementation systemically.

We have also examined NSF's oversight of and the Antarctic Support Contractor's actions to ensure the health and safety of participants in the USAP. We found that in general NSF's oversight and the Contractor's performance were effective in ensuring adequate health and safety. We also identified four areas for improvement, including the lack of a process for identifying, responding to, and tracking data on misconduct that occurs in the USAP, and opportunities to enhance pharmacy operations.

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<sup>4</sup> In August 2016, Leidos Holdings Inc. and Lockheed Martin's Information Systems and Global Solutions business segment merged. As a result of the merger, Leidos will hold the Antarctic Support Contract, once plans for all contracts affected by the merger have been reviewed.

In January 2018 we plan to visit the McMurdo and South Pole research stations to conduct fieldwork for the 2017 financial statement audit, the 2017 audit of NSF's information security program, and other aspects of the USAP program as appropriate.

### *Improving Grant Administration*

Making grants in support of promising scientific research is central to NSF's mission. Thus, ensuring that grant funds are spent as intended is critical. While efforts to reduce the administrative burden on grantees have value, the agency must proceed carefully so that accountability for public funds is not compromised in the process.

Because many NSF awardees pass portions of their funding on to subrecipients that perform a significant amount of the project's work, NSF must ensure that such awardees are appropriately overseeing the actions and expenditures of their subrecipients. We have recently started an audit on NSF's process to ensure that its awardees are monitoring their subrecipients and, pursuant to the *American Innovation and Competitiveness Act*, we will provide our report and any associated recommendations, to Congress no later than December 2017.

### *Moving NSF Headquarters to a New Building*

NSF has four months (September through December 2017) to complete its move from the two buildings it currently occupies in Arlington, Virginia, to its new headquarters in Alexandria, Virginia, and decommission its current offices before its current leases expire at the end of December, 2017. If the current offices are not decommissioned prior to January 1, 2018, the Foundation will have to begin paying possibly increased rent for the Arlington offices, in addition to rent for its new Alexandria location. Our most recent examination of risks associated with NSF's move recommended that NSF improve its baseline schedule, which could play a critical role in NSF's ability to identify and manage project risk.

NSF management informed us that it does not intend to update its baseline schedule and proposed an alternative approach that relies on its existing schedule. We will continue to closely monitor NSF's progress toward meeting the deadline to move and will provide updates to the agency and the Congress as we identify risks.

### **NSF and OIG Efforts to Strengthen Accountability**

As noted previously, the Foundation has begun to make progress in its efforts to achieve greater accountability. A key contribution to the progress to date has been made by the Stewardship Collaborative, a group which was established by NSF and OIG in 2010 as a collective effort by both offices to help achieve the shared mission of proper stewardship of the taxpayer's investment in science, engineering, and education.

The Collaborative is made up of members from varying units within NSF and OIG and is chaired by Senior Executive leaders from NSF's financial administration division and OIG's Office of Audit. It meets monthly to discuss current issues and possible upcoming barriers to resolution—

as well as potential solutions. For example, it recently developed a joint training effort to improve understanding of the audit resolution process, including members' responsibilities in the process.

Along with increasing positive communication, the Collaborative has been instrumental in resolving a number of critical audit recommendations. Most importantly, it has helped ensure that NSF has addressed recommendations without impinging on the OIG's independence — and that management decisions are made by the right people within the Foundation.

### **Conclusion**

Scientific research and discovery are the building blocks of the technological advances that are essential for our nation's economy to grow and to meet the challenges of the future, and NSF has an essential role to play in promoting scientific discovery. For the agency to achieve its mission, NSF must spend its research funds in the most effective and efficient manner while maintaining the highest level of accountability over taxpayer dollars.

My office will continue to utilize the full range of our audit and investigative resources to exercise robust oversight of NSF's stewardship of federal funds and to safeguard the integrity of the Foundation's operations.

NSF applies its highest level of attention and scrutiny to determine the scientific merit of the projects it decides to fund. It is imperative that NSF apply the same rigorous attention and scrutiny to its financial management of its programs and operations. Public trust and confidence demand the highest level of accountability, and we look forward to working with NSF management, the National Science Board, and Congress to achieve this goal.