

**NATIONAL SCIENCE FOUNDATION**  
2415 EISENHOWER AVENUE  
ALEXANDRIA, VA 22314



**OFFICE OF THE  
DIRECTOR**

November 21, 2017

Maria T. Zuber, Ph.D.  
Chairperson, National Science Board  
Massachusetts Institute of Technology, Rm 3-234  
77 Massachusetts Avenue  
Cambridge, MA 02139-4307

Dear Dr. Zuber:

The National Science Foundation herewith transmits its response to the Office of Inspector General's (OIG) Semiannual Report, which covers the period from April 1, 2017, through September 30, 2017. Also included for the same time period is the management report on final actions on audits with disallowed costs.

Our response first provides additional information and context on two topics related to NSF's Management of Major Multi-User Facilities and NSF's Business Operations Management and Control Environment, to more fully inform the discussion of these issues. We also provide an overview of the partnership between NSF and the OIG that led to over \$3 million of investigative recoveries during this reporting period. Finally, we affirm our commitment to working with the OIG toward our shared goal of effective stewardship of taxpayer dollars.

Sincerely,

A handwritten signature in black ink that reads "Joan Ferrini-Mundy".

Joan Ferrini-Mundy  
Chief Operating Officer

Enclosures

cc: Dr. France Córdova

## **NSF's Response to the Office of the Inspector General's Semiannual Report to Congress**

NSF appreciates the opportunity to provide its response to the Office of Inspector General's (OIG) Semiannual Report, covering the period from April 1, 2017, through September 30, 2017. NSF remains committed to serving the research community effectively, to continually improving stewardship across the agency, and to safeguarding Federal funds awarded by NSF in support of the agency's mission. NSF recognizes the OIG's contributions toward this work, including the opportunities for improvements identified in the OIG's reports, and that, consistent with the OIG's independence, both NSF and the OIG benefit from constructive engagement.

In this response, we highlight two audits and reviews, related to NSF's management of major multi-user research facilities and NSF's business operations management and control environment, to clarify our perspective and provide additional information. Second, we provide an overview of NSF's support of the OIG investigations that have led to over \$3 million of investigative recoveries during this reporting period and additional information about NSF's response to the OIG's review of the Responsible Conduct of Research Requirement. Finally, we include the Management Report on final actions on audits with disallowed costs.

### **I. Introduction**

At the outset, we are pleased to report that NSF has reached several important milestones for FY 2017. These include milestones in NSF-funded research. In October, Drs. Rainer Weiss, Kip Thorne, and Barry Barish, three scientists who led the development of the NSF-funded Laser Interferometer Gravitational-wave Observatory (LIGO) won the 2017 Nobel Prize in Physics for their work detecting gravitational waves. NSF's sustained commitment to major multi-user research facilities such as LIGO supports revolutionary research. To date, NSF has funded 231 Nobel prize winners.

In addition, NSF has reached milestones in two areas reviewed by the OIG. NSF received its twentieth consecutive unmodified audit opinion for its FY 2017 financial statements, without any material weaknesses, significant deficiencies or any instances of non-compliance with applicable laws and regulations. NSF acknowledges the professionalism of its staff, the OIG audit team, and the OIG's contract auditor, Kearney & Company, in completion of the audit. We look forward to responding to related recommendations by Kearney and the OIG for further improvements to financial and information technology management.

NSF also successfully completed its relocation to Alexandria, Virginia. We appreciated the cooperation by all stakeholders to support the Relocation Office's execution of the move.

## **II. Audits and Reviews: NSF Takes Action to Improve Oversight of the NEON Project and to Mitigate Risks of Improper Payments**

This section provides more comprehensive information related to two areas for which the OIG's Office of Audits issued inspection reports during this Semiannual Reporting period. First, we provide additional context and clarification in the area of NSF's Management of Major Multi-User Research Facilities, focused on NSF's management of the National Ecological Observatory Network (NEON) project. Second, we describe an inspection report in the area of NSF's Business Operations Management and Control Environment, focused on NSF's Compliance with the Improper Payments Elimination and Recovery Act (IPERA) for FY 2016. NSF has taken concrete and constructive steps to strengthen its controls for these key areas, which are also highlighted in the OIG's Management Challenges for FY 2018.

### **1. NSF's Controls over Battelle Memorial Institute Award for the NEON Project**

NSF appreciates opportunities for continued improvement of its oversight of major multi-user research facilities. NSF believes, however, that the OIG's inspection of NSF controls over the Battelle Memorial Institute (Battelle) award for the NEON project does not fully reflect NSF's necessary and unprecedented actions to change the awardee for this at-risk project from NEON, Inc., to Battelle while construction was ongoing.

By way of background, the OIG's September 2015 NEON inspection report stated that "[i]t is imperative that NSF take strong and immediate action to address OIG recommendations and to ensure robust oversight of the NEON project as it proceeds." NSF did exactly that - first, by establishing a "Watch List" in the Office of the Director and placing the NEON project on the list immediately following the issuance of the OIG's 2015 report; second, by deciding that it needed to replace NEON, Inc., in December 2015; and third, by selecting Battelle to manage the project in March 2016. In 2015, the Director also appointed an independent expert, General James A. Abrahamson, to examine the root causes of the project's potential overrun and to perform site visits and analyses that were important inputs to the intervention decision taken by NSF. General Abrahamson's advice and observations were key to NSF's course correction on the NEON project as well as future considerations around major facility oversight.

Consistent with the OIG's call for NSF to take "strong and immediate" action on the NEON project, NSF believed it was necessary to complete a successful transition as quickly as possible to new management, mitigating further negative impact to cost or schedule. Our expedited evaluation and award process was rigorous and well documented for both construction and initial operations.

While the OIG Semiannual Report has raised concerns with the fact that NSF provided initial funding to Battelle before completing its cost analysis, we maintain that NSF prudently provided the initial funding prior to finalizing award costs. To have suspended construction pending award finalization would have added millions of dollars in additional costs that were avoided by

NSF's action. NSF fully documented the need to place initial funding under the initial award to meet critical near-term requirements pending finalization. Further, NSF imposed more rigorous controls than standard for financial assistance awards by providing initial funding through an award action that limited Battelle's work effort to the minimum requirements necessary to continue progress under the project without further impacting cost and schedule.

The OIG has further stated concerns as to whether initial funding provided by NSF to Battelle prior to the finalization of costs may have resulted in funding of costs that were not necessary, reasonable, or allowable. This initial funding, however, included the provision that these amounts, which were necessary to maintain critical construction and operations requirements, were subject to a further evaluation prior to finalization. Consequently, the costs associated with construction and initial operations were thoroughly reviewed by NSF in accordance with agency procedures for financial assistance awards. A Cost Proposal Review Document documented the reasonableness of all categories of costs, which were informed by an external Independent Cost Estimate analysis.

The OIG Semiannual Report also raises concerns with NSF's policies associated with the payment of fees for some Major Multi-User Research Facilities. Specific to the fee provided to Battelle, we note that Battelle is an applied science and technology development company established as a nonprofit charitable trust exempt from taxation under Section 501(c)(3) of the Internal Revenue Code because it is organized for charitable, scientific and education purposes. NSF executed a deviation to internal agency policies and procedures that properly documented the need to provide a reasonable fee consistent with the organization's mission. We further note that the OIG has raised concerns with NSF not requiring the submission of financial information by an organization to determine the need for the payment of a fee. But limiting the payment of fee to those organizations that require it to maintain financial viability would be inconsistent with Federal practices and would not incentivize highly qualified organizations from competing for NSF major facility awards. It is also notable that NSF has not been able to identify any other Federal agency that implements this type of requirement for fee consideration.

NSF has proper controls in place to monitor or evaluate key aspects of the Battelle award. These controls include incurred cost audits, monthly reporting on contingency, and the contingency reserve policy. Finally, NSF appreciates that the OIG has already closed six (or sub-parts thereof) of the ten recommendations in the Battelle Report in view of NSF's responsive actions to date. NSF is working to execute its plan for the remaining open items.

## 2. Improving NSF's Business Operations by Minimizing Improper Payments

During this reporting period, the OIG conducted an inspection of NSF's compliance in FY 2016 with IPERA. We are pleased that the OIG found that NSF complied with the IPERA reporting requirements for FY 2016 and had no formal recommendations. Rather, the OIG found that the corrective actions NSF had taken in response to the OIG's prior IPERA inspection

“demonstrated strong progress in working toward its next full IPERA risk inspection in FY 2018.”

These corrective actions included issuing Standard Operating Guidance (SOG), *BFA 2017-1*, Procedures for the Improper Payments Risk Reviews, in 2016 and documenting our implementation of the SOG. NSF will continue to collaborate with the OIG to implement and document a strong risk assessment process to ensure ongoing compliance with IPERA.

### **III. Investigations: NSF Supports OIG Investigations and Responds to the OIG’s Review of NSF’s Responsible Conduct of Research Requirement**

NSF constructively engages with the OIG’s Office of Investigations to both identify and mitigate potential fraud, waste, and abuse. More specifically, NSF supports the OIG’s program integrity investigations, including those arising from Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) awards. Correspondingly, NSF appreciates the information provided by the OIG’s review of Institutions’ Implementation of NSF’s Responsible Conduct of Research (RCR) Requirement.

#### **1. NSF Supports the OIG’s Program Integrity Investigations related to SBIR/STTR Awards**

SBIR/STTR awards are important ways to foster innovation that stimulates the U.S. economy. These awards can be higher risk in view of the type of funded research, which is often early stage and involves a high degree of technical risk, and the type of awardees, which are small entities that may be new entrepreneurs. To that end, NSF and the OIG have effectively and consistently collaborated to safeguard SBIR/STTR award dollars.

NSF’s and the OIG’s shared stewardship has been recognized by the Government Accountability Office (GAO) in its recent report on Small Business Research Programs (GAO-17-337, issued April 2017). GAO found that NSF was one of the top two agencies for implementation of the ten requirements for fraud, waste and abuse prevention in SBIR/STTR programs, and one of only three agencies that had implemented all of the components of the requirement to coordinate with its OIG.

NSF’s commitment to identifying fraud, waste, and abuse in these programs is Agency-wide. The “tone at the top” is set by the Director, who fosters a culture of “see something, say something” in all relevant conversations with NSF leadership. The Suspension and Debarment Official carefully reviews and decides OIG investigation referrals. Throughout NSF, cognizant staff are critical actors in maintaining the integrity of these programs. For example, NSF staff have communicated to the OIG concerns about possible fraud, waste, and abuse in awards. Correspondingly, the OIG has shared evolving indicators of potential fraud with NSF staff to inform administration of the awards. In addition, the OIG conducts presentations at NSF’s workshops for new SBIR/STTR awardees, which serve the dual purposes of (1) educating new awardees of the program requirements, thereby reducing the risk of fraud; and (2) documenting

that awardees have been advised of these requirements, so that pleading ignorance will not be a valid defense for subsequent misconduct.

NSF and OIG cooperation continues as the OIG's investigations reach critical stages, when funds are at immediate risk. First, NSF's Office of Budget, Finance and Award Management (BFA) responds expeditiously to requests by the OIG to suspend or terminate awards due to its investigations. Similarly, when investigations mature to indictments or criminal or civil complaints, as filed by the U.S. Department of Justice, NSF's Suspension and Debarment Official, supported by the Office of General Counsel, acts swiftly upon recommendations by the OIG to issue suspensions. In some cases, investigations have involved SBIR/STTR awards from multiple agencies, for which the OIG and NSF served as the leads in the corresponding investigation and suspension/debarment proceedings. During this reporting period, the NSF Suspension and Debarment Official issued six suspensions and imposed four debarments.

## 2. NSF Responds to the OIG's Review of Institutions' Implementation of RCR Requirement

NSF appreciates the OIG's review of the implementation of NSF's RCR requirement by our awardee institutions. We are pleased that most of the institutions sampled by the OIG had complied with NSF's RCR requirement by the close of the review. In August 2017, the Director issued Important Notice No. 140 to Presidents of Universities and Colleges and Heads of Other NSF Grantee Organizations, entitled, "Training in Responsible Conduct of Research — A Reminder of the NSF Requirement." The Notice highlighted the OIG's Review of Implementation of the RCR Requirement as well as the report by the National Academies of Sciences, Engineering, and Medicine (NASEM), called *Fostering Integrity in Research* (April 2017). The Notice also emphasized that the OIG report suggested that universities could benefit from best practices and drew attention to chapters in the NASEM report about some best practices and the many resources available for RCR educational materials and strategies.

## **IV. Management Report on Final Actions Taken on Audits with Disallowed Costs**

The "Management Report on Final Actions Taken on Audits with Disallowed Costs" (also known as Final Action Tables) is appended to this response. The Final Action Tables are developed parallel to the OIG Semiannual Report and provide information on all resolved audit reports requiring recovery of disallowed costs (collections, offsets, write-offs, demands for payment and other monetary benefits resulting from audits). These tables are submitted to the Agency Head semiannually, as required by OMB Circular No. A-50, Revised, Section 8.a.(8), who provides them to the OIG to be submitted to Congress in conjunction with the OIG's Semiannual Report.

## **V. Conclusion**

NSF acknowledges the OIG's role in advancing NSF's effective stewardship of taxpayer dollars. We are committed to continuing engagement with the OIG to identify opportunities for improvements in the areas of large facility oversight and our business operations. NSF will continue to work as a robust partner with the OIG for its investigations, while collaborating to mitigate the risk of fraud, waste, and abuse.

<b>Management Report on Final Actions Taken on Audits with Disallowed Costs for the Six-month Period Ended September 30, 2017</b>			
			<b>Sustained Costs</b>
<b>A. Audit Reports with management decisions on which final action has not been taken at the beginning of the period:</b>			
1	09-1-014	University of Michigan <sup>1</sup>	\$81,461
2	09-5-048	College of the Mainland	\$15,004
3	13-1-002	Jackson State University	\$231,320
4	13-1-004	Cornell University	\$35,573
5	15-5-049	Paine College	\$177
6	16-1-021	Columbia University	\$334,949
7	16-1-022	Georgetown University <sup>2</sup>	\$135,638
8	16-4-028	Toyota Technological Institute at Chicago	\$25
9	16-5-031	Tuskegee University	\$9,960
10	16-6-007	Associated Universities, Inc.	\$35,274
<b>Subtotal A</b>			<b>\$879,381</b>
			<b>10</b>
<b>B. Audit Reports on which management decisions were made during the period:</b>			
1	15-1-012	University of California - Berkeley	\$78,728
2	15-1-014	University of Wisconsin - Madison	\$134,514
3	15-1-020	Stanford University	\$70,040
4	16-4-052	National Ecological Observatory Network (NEON)	\$962,298
5	16-4-059	New York Botanical Garden	\$328
6	17-1-001	Pennsylvania State University	\$11,214
7	17-4-026	UNAVCO, Inc.	\$113,744
8	17-5-006	Worcester Polytechnic Institute	\$40,547
9	17-5-020	Montgomery College	\$564
10	17-5-030	Mount Holyoke College	\$10,446
11	17-5-054	Chicago State University	\$473
<b>Subtotal B</b>			<b>\$1,422,896</b>
			<b>11</b>
<b>C. Total Audit Reports pending final action during this period: (Total A+B: 21)</b>			<b>\$2,302,277</b>
<b>D. Audit Reports on which final action was taken during this period:</b>			
1	15-1-012	University of California - Berkeley	\$78,728
2	16-1-021	Columbia University	\$334,949
3	16-1-022	Georgetown University <sup>2</sup>	\$135,638
4	16-4-059	New York Botanical Garden	\$328
5	16-5-031	Tuskegee University	\$9,960
6	16-6-007	Associated Universities, Inc.	\$35,274
7	17-1-001	Pennsylvania State University	\$11,214
8	17-4-026	UNAVCO, Inc.	\$113,744
9	17-5-006	Worcester Polytechnic Institute	\$40,547
10	17-5-020	Montgomery College	\$564
11	17-5-030	Mount Holyoke College	\$10,446
<b>Subtotal D</b>			<b>\$771,392</b>
			<b>11</b>
<b>E. Audit Reports needing final action at the end of the period:</b>			
1	09-1-014	University of Michigan <sup>1</sup>	\$81,461
2	09-5-048	College of the Mainland	\$15,004
3	13-1-002	Jackson State University	\$231,320
4	13-1-004	Cornell University	\$35,573
5	15-1-014	University of Wisconsin - Madison	\$134,514
6	15-1-020	Stanford University	\$70,040
7	15-5-049	Paine College	\$177
8	16-4-028	Toyota Technological Institute at Chicago	\$25
9	16-4-052	National Ecological Observatory Network (NEON)	\$962,298
10	17-5-054	Chicago State University	\$473
<b>Subtotal E</b>			<b>\$1,530,885</b>
			<b>10</b>
<b>F. Reconciliation of Audit Reports: (Total D+E: 21)</b>			<b>\$2,302,277</b>
<sup>1</sup> Original sustained costs in the amount of \$92,667 were appealed by the awardee. \$11,206 of the sustained costs were overturned under the appeal, reducing the amount to be collected to \$81,461.			
<sup>2</sup> Previously reported as report number 16-1-023; the correct report number is 16-1-022.			



**Management Report on Final Actions  
Taken on Audits with Disallowed Costs for the Six-month Period  
Ended September 30, 2017**

	<b>Number of Reports</b>	<b>Dollar Value</b>
<b>A. Audit reports with management decision on which final action has not been taken at the beginning of the period</b>	<b>10</b>	<b>\$879,381</b>
<b>B. Audit reports on which management decisions were made during the period</b>	<b>11</b>	<b>\$1,422,896</b>
<b>C. Total audit reports pending final action during this period (Total A+B)</b>	<b>21</b>	<b>\$2,302,277</b>
<b>D. Audit reports on which final action was taken during this period</b>		
<b>(1) Recoveries</b>		
a) Collection and Offset	11	\$771,392
b) Amount uncollectible	0	
<b>(2) Write-offs</b>	0	
<b>E. Audit reports needing final action at the end of the reporting period (C-D)</b>	<b>10</b>	<b>\$1,530,885</b>
<b>F. Total (D+E)</b>	<b>21</b>	<b>\$2,302,277</b>

**Management Report on Final Action  
on Audits with Recommendations for Better Use of Funds  
Agreed to by Management  
For the Six-month Period Ended September 30, 2017**

	<b>Number of Reports</b>	<b>Dollar Value</b>
<b>A. Audit Reports with management decisions on which final action had not been taken at the beginning of the period</b>	<b>0</b>	<b>\$0</b>
<b>B. Audit Reports on which management decisions were made during the period</b>	<b>0</b>	<b>\$0</b>
<b>C. Audit reports on which final action was taken during this period (Total A+B)</b>	<b>0</b>	<b>\$0</b>
<b>D. Recommendations on which final action was taken during this period</b>	<b>0</b>	
<b>(1) the dollar value of recommendations that were actually completed</b>		<b>\$0</b>
<b>(2) the dollar value of recommendations that management subsequently concluded should not or could not be implemented or completed</b>		<b>\$0</b>
<b>E. Audit reports for which no final action has been taken by the end of the reporting period (C-D)</b>	<b>0</b>	<b>\$0</b>