

Performance Audit of Incurred Costs – Arizona State University

REPORT PREPARED BY COTTON & COMPANY LLP

NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL

April 15, 2019
OIG 19-1-007





AT A GLANCE

Performance Audit of Incurred Costs – Arizona State University

Report No. OIG 19-1-007

April 15, 2019

AUDIT OBJECTIVE

The National Science Foundation Office of Inspector General engaged Cotton & Company LLP (C&C) to conduct a performance audit of incurred costs at Arizona State University (ASU) for the period January 1, 2014, to December 31, 2016. The auditors tested more than \$4.9 million of the approximately \$159 million of costs claimed to NSF. The objective of the audit was to determine if costs claimed by ASU on NSF awards were allowable, allocable, reasonable, and in compliance with NSF award terms and conditions and Federal financial assistance requirements.

AUDIT RESULTS

The report highlights concerns about ASU's compliance with certain Federal, NSF, and/or ASU regulations and policies when allocating expenses to NSF awards. The auditors questioned nearly \$1.2 million of costs claimed by ASU during the audit period. Specifically, the auditors found \$890,982 in unapproved subaward payments, \$129,095 in inappropriately allocated expenses, \$56,720 in inappropriately allocated indirect costs, \$41,553 in unsupported expenses, \$32,582 in inappropriate subaward expenses, \$22,418 in unallowable expenses, and \$5,138 in unreasonable travel expenses. The auditors also identified two compliance findings for which there were no questioned costs. C&C is responsible for the attached report and the conclusions expressed in this report. NSF OIG does not express any opinion on the conclusions presented in C&C's audit report.

RECOMMENDATIONS

The auditors included 9 findings in the report with associated recommendations for NSF to resolve the questioned costs and to ensure ASU strengthens administrative and management controls.

AUDITEE RESPONSE

ASU agreed with some of the findings, but disagreed or partially disagreed with 4 findings in the report. ASU's response is attached in its entirety to the report as Appendix B.

FOR FURTHER INFORMATION, CONTACT US AT OIGPUBLICAFFAIRS@NSF.GOV.



National Science Foundation • Office of Inspector General
2415 Eisenhower Avenue, Alexandria, Virginia 22314

MEMORANDUM

DATE: April 15, 2019

TO: Dale Bell
Director
Division of Institution and Award Support

Jamie French
Director
Division of Grants and Agreements

FROM: Mark Bell [REDACTED]
Assistant Inspector General
Office of Audits

SUBJECT: Audit Report No. 19-1-007, Arizona State University

This memo transmits the Cotton & Company LLC (C&C) report for the audit of costs charged by Arizona State University (ASU) to its sponsored agreements with the National Science Foundation during the period January 1, 2014, to December 31, 2016. The audit encompassed more than \$4.9 million of the approximately \$159 million claimed to NSF during the period. The objective of the audit was to determine if costs claimed by ASU on NSF awards were allowable, allocable, reasonable, and in compliance with NSF award terms and conditions and Federal financial assistance requirements.

Please coordinate with our office during the 6-month resolution period, as specified by Office of Management and Budget Circular A-50, to develop a mutually agreeable resolution of the audit findings. The findings should not be closed until NSF determines that all recommendations have been adequately addressed and the proposed corrective actions have been satisfactorily implemented.

OIG Oversight of the Audit

C&C is responsible for the attached auditors' report and the conclusions expressed in this report. We do not express any opinion on the conclusions presented in C&C's audit report. To fulfill our responsibilities, we:

- reviewed C&C's approach and planning of the audit;
- evaluated the qualifications and independence of the auditors;

- monitored the progress of the audit at key points;
- coordinated periodic meetings with C&C, as necessary, to discuss audit progress, findings, and recommendations;
- reviewed the audit report prepared by C&C; and
- coordinated issuance of the audit report.

We thank your staff for the assistance that was extended to the auditors during this audit. If you have any questions regarding this report, please contact Jae Kim at 703.292.7100 or OIGpublicaffairs@nsf.gov.

Attachment

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ARIZONA STATE UNIVERSITY

**PERFORMANCE AUDIT OF INCURRED COSTS FOR
NATIONAL SCIENCE FOUNDATION AWARDS
FOR THE PERIOD JANUARY 1, 2014, TO DECEMBER 31, 2016**

**NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL**

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**NATIONAL SCIENCE FOUNDATION
PERFORMANCE AUDIT OF INCURRED COSTS
ARIZONA STATE UNIVERSITY**

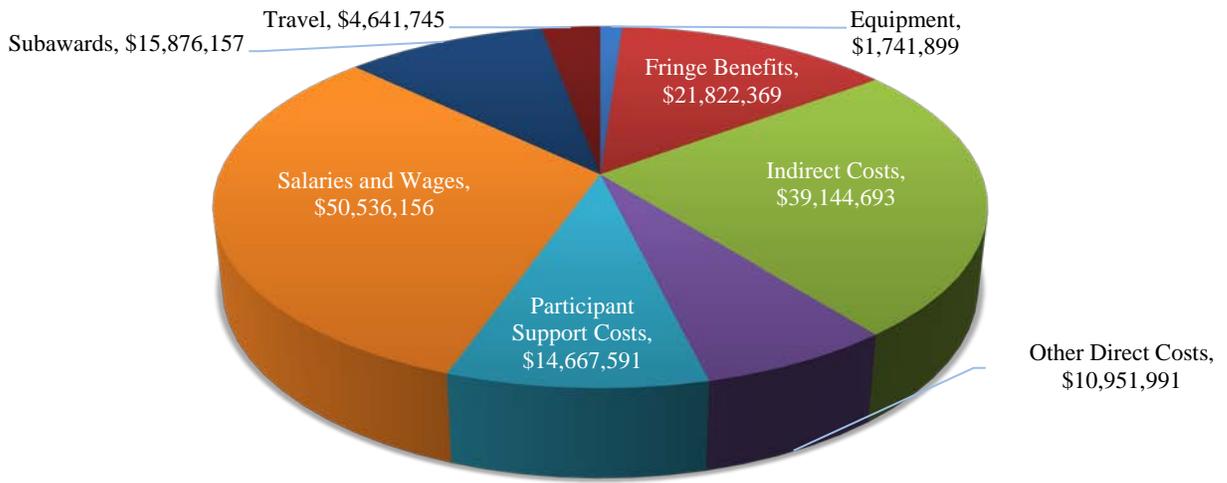
I. BACKGROUND

The National Science Foundation (NSF) is an independent Federal agency whose mission is to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense. Through grant awards, cooperative agreements, and contracts, NSF enters into relationships with non-Federal organizations to fund research and education initiatives and to assist in supporting its internal financial, administrative, and programmatic operations.

Most Federal agencies have an Office of Inspector General (OIG) that provides independent oversight of the agency's programs and operations. Part of NSF OIG's mission is to conduct audits and investigations to prevent and detect fraud, waste, and abuse. In support of this mission, NSF OIG may conduct independent and objective audits, investigations, and other reviews to promote the economy, efficiency, and effectiveness of NSF programs and operations, as well as to safeguard their integrity. NSF OIG may also hire a contractor to provide these audit services.

NSF OIG engaged Cotton & Company LLP (referred to as "we") to conduct a performance audit of costs incurred by Arizona State University (ASU). ASU is a public research university that received \$207 million in research grants and contracts from Federal awards in fiscal year (FY) 2016. As illustrated in Figure 1, ASU's general ledger supported more than \$159 million in expenses claimed through NSF's Award Cash Management Service (ACMS) across 813 NSF awards from January 1, 2014, through December 31, 2016. Figure 1 also shows costs claimed by budget category based on the accounting data that ASU provided.

Figure 1. Costs Claimed by NSF Budget Category, January 1, 2014, through December 31, 2016



Source: Auditor analysis of accounting data provided by ASU.

This performance audit, conducted under Order No. D16PB00550, was designed to meet the objectives identified in the Objectives, Scope, and Methodology (OSM) section of this report (Appendix C) and was conducted in accordance with Generally Accepted Government Auditing Standards (GAGAS), issued by the U.S. Government Accountability Office. We communicated the results of our audit and the related findings and recommendations to ASU and NSF OIG. We have included ASU’s full response in Appendix B.

II. AUDIT RESULTS

As described in the OSM section of this report, this performance audit included obtaining transaction-level data for all costs that ASU claimed on NSF awards during the audit period. We judgmentally selected a sample of 300 transactions for testing, totaling \$4,902,693.

ASU did not always comply with all Federal, NSF, and ASU regulations and policies when allocating expenses to NSF awards. It needs improved oversight of the allocation of expenses to NSF awards to ensure costs claimed are reasonable, allocable, and allowable in accordance with those regulations and policies. As a result, we questioned \$1,178,488 in direct and indirect costs that ASU claimed during the audit period, as follows:

- \$890,982 of unapproved subaward payments;
- \$129,095 of inappropriately allocated expenses;
- \$56,720 of inappropriately allocated indirect costs;
- \$41,553 of unsupported expenses;
- \$32,582 of inappropriate subaward expenses;
- \$22,418 of unallowable expenses; and
- \$5,138 of unreasonable travel expenses.

We provide a breakdown of the questioned costs by finding in Appendix A of this report.

Finding 1: NSF Approval Not Obtained Before Transferring Significant Portions of Award to Other Organizations

ASU transferred a significant portion of the research, and a substantial amount of the effort, under NSF Award No. [REDACTED] to other organizations without receiving NSF's approval to do so, as required by the NSF *Proposal and Award Policies and Procedures Guide* (PAPPG).¹ Specifically, ASU did not request approval to contract or transfer a significant amount of the research or effort to other organizations, either in the original grant proposal or through subsequent requests submitted to NSF² via the NSF FastLane System;³ however, ASU awarded \$915,540, or approximately 39 percent of the award's approved budget of \$2,324,821, to two organizations to allow senior personnel identified in the original grant budget to continue performing grant-related research after leaving ASU, as follows:

- ASU awarded \$588,132,⁴ or approximately 25 percent of the award budget, to the Georgia Tech Research Corporation (GTRC) to enable the Principal Investigator (PI) to continue conducting and coordinating research performed on this award as the project's PI after the PI transferred to GTRC.⁵ GTRC invoiced ASU for \$605,502 during the

¹ NSF 08-1, PAPPG, Part II, Award & Administration Guidelines (AAG), Chapter II: Grant Administration, Section B.3 states that, except for the procurement of such items as commercially available supplies, materials, equipment, or general support services allowable under the grant, no significant part of the research or substantive effort under an NSF grant may be contracted or otherwise transferred to another organization without prior NSF authorization. Further, NSF's July 1, 2008 Research Terms and Conditions, Section 25.(b)(4) states that a recipient must obtain the prior written approval of the Federal awarding agency before the transfer of a significant part of the research or substantive programmatic effort.

² NSF 08-1, PAPPG, Part II, Chapter II, Section B.3 states that the intent to enter into a subaward agreement should be disclosed in the proposal submission, and that if it becomes necessary to contract or otherwise transfer a significant part of the research or substantive effort after a grant has been made, the grantee shall electronically submit, at a minimum (i) a clear description of the work to be performed, (ii) the basis for selection of the subawardee, and (iii) a separate budget for each subaward, and NSF will indicate its authorization by an amendment to the grant signed by the Grants and Agreements Officer. Further, NSF's July 1, 2008 Research Terms and Conditions, Section 25.(b)(4) states that a recipient must submit a justification, a description of the scientific/technical impact on the project, and a budget estimate to the cognizant Federal awarding agency official when requesting the transfer of a significant part of an award's research, unless described in the approved application or approved modifications to the award.

³ NSF 08-1, PAPPG, Part II, Chapter II, Section A.2.b. states that all notifications and requests contained in AAG Exhibit II, 1, which includes the contracting or transferring of project effort, must be submitted electronically via the NSF FastLane System.

⁴ ASU awarded a total of \$655,521 to the Georgia Tech Research Corporation (GTRC), including \$588,132 to perform grant-related research, \$40,829 to support a PhD student, and \$26,560 to allow GTRC personnel to attend a grant-related conference. As NSF had specifically approved the \$67,389 of student and travel-related funding in Amendments No. 001 and 002 to this award, we did not include these costs in the observation.

⁵ After the PI transferred to GTRC, ASU requested approval to change the PI on this award; however, the NSF Program Officer rejected this request.

subaward's Period of Performance (POP). The subaward's POP was 7.67 years,⁶ or approximately 96 percent of the NSF award's 8-year POP.⁷

- ASU awarded \$327,408, or approximately 14 percent of the award budget, to the University of Georgia (UG) to enable a co-PI that ASU had identified in the original NSF award budget to continue performing research on this award as a co-PI after the co-PI transferred to UG. UG invoiced ASU for \$326,619 during the subaward's POP. The subaward's POP was 5.1 years,⁸ or approximately 64 percent of the NSF award's POP.

As a result of these subawards, ASU transferred a significant portion of the research, effort, and funding under NSF Award No. [REDACTED] to other organizations. ASU should therefore have requested NSF's authorization before issuing the subawards.

ASU verified that it did not formally request or receive NSF's authorization to enter into these subaward agreements; however, it believes that expenditures incurred under these subawards should be allowable, as the NSF Program Director for this award was aware of the subaward agreements. However, only NSF Grants and Agreements Officers are able to make commitments, obligations, or awards, or to authorize the expenditure of funds on behalf of NSF;⁹ the Program Director's knowledge of these subawards does not support that NSF had appropriately authorized the subawards. Further, the NSF PAPPG specifically notes that NSF will indicate its authorization of subawards requested after grant award by issuing a grant amendment that has been signed by the Grants and Agreements Officer.¹⁰

ASU did not have sufficient policies or procedures in place to ensure that it always obtained authorization from appropriate NSF personnel when transferring a significant amount of the research funded by NSF awards to other organizations, as required by the NSF PAPPG. Because ASU did not receive authorization to enter into the subaward agreements identified above, we are questioning the cumulative costs that ASU charged NSF for these subawards as of December 31, 2016.

⁶ The POP of this subaward was January 1, 2009, through August 31, 2016.

⁷ The POP of NSF Award [REDACTED] was September 15, 2008, through August 31, 2016.

⁸ The POP of this subaward was August 1, 2009, through August 31, 2014.

⁹ See NSF 08-1, PAPPG, Part I, GPG, Chapter III: NSF Proposal Processing and Review, Section E.

¹⁰ See NSF 08-1, PAPPG, Part II, Chapter II, Section B.3. [Footnote 2]

Table 1. Unallowable Subaward Payments

Description	NSF Award No.	Fiscal Year	Questioned Costs ¹¹
GTRC Subaward		2009-2016	\$551,238 ¹²
UG Subaward		2009-2014	339,744 ¹³
Total Questioned Costs			<u>\$890,982</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Resolve the \$890,982 of questioned costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management controls and processes over transferring significant parts of Federally funded research to other organizations. Processes could include:
 - a. Requiring all subawards sponsored by Federal funding to be approved by the Federal award sponsor before approving subawardee invoices for payment.
 - b. Requiring periodic training for PIs and other personnel responsible for entering into subaward agreements.

Arizona State University Response: ASU stated that it would review its subaward issuance process to verify that appropriate controls are in place to ensure that it obtains Federal approvals before it approves subawardee invoices for payment; however, it did not concur with this finding, nor did it agree with the recommendation to repay the questioned costs. Specifically, ASU asserted that because it had expended the funding as proposed for the benefit of the project and because the key personnel named in the original proposal had coordinated and conducted the research, there were no changes to the proposed scope of work, and it would therefore be appropriate to characterize this observation as a compliance finding, with no questioned costs.

Further, ASU stated that, although it did not request approval for these subawards through the NSF FastLane system, it was acting with the understanding that it had NSF’s full support to issue

¹¹ The questioned amount includes \$251,712 of subaward costs claimed during our audit period and \$639,270 claimed before our audit period became effective.
¹² \$605,502 (total invoiced by GTRC) - \$67,389 (GTRC subaward funds approved by NSF in Amendments 1 and 2) + \$13,125 (indirect costs ASU claimed related to the direct costs invoiced by GTRC)
¹³ \$326,619 (total invoiced by UG) + \$13,125 (indirect costs ASU claimed related to the direct costs invoiced by UG)

the subawards based on the PI's conversations with the NSF Program Director. ASU stated that NSF's approval of Amendments No. 001 and 002 to this grant, which awarded \$67,389 of subaward funding for GTRC, showed that NSF was aware of, and approved of, at least a portion of the GTRC subaward.

Auditors' Additional Comments: We determined that Amendment No. 001 to NSF Award No. [REDACTED] awarded funding for a subcontract to GTRC, and we therefore removed \$40,829 from the questioned GTRC subaward costs included in the draft report;¹⁴ however, our position regarding the remainder of this finding does not change. Specifically, because ASU did not obtain a grant amendment from NSF approving the subawards in accordance with the NSF PAPPG, we are questioning all subaward costs awarded to GTRC and UG that NSF did not specifically approve under Amendment No. 001 or 002.

Finding 2: Expenses Not Appropriately Allocated to NSF Awards

ASU did not allocate expenses to NSF awards based on the relative benefits received by the awards, as required by 2 CFR 220, Appendix A, Section C.4 and 2 CFR §200.405.¹⁵ Specifically, ASU inappropriately allocated \$129,095 in expenses to 17 NSF awards, as follows:

- ***Student Stipend/Tuition Expenses***

ASU did not allocate stipend/tuition expenses to NSF awards based on the relative benefits received by the award charged. Specifically:

- On December 30, 2013, 1 day before NSF Award No. [REDACTED] expired, ASU awarded an \$8,000 Research Experiences for Undergraduates stipend to an undergraduate student and charged the expense to this award. Although ASU issued the letter awarding the stipend during the award's POP, the stipend does not appear to have supported work performed on the award during the award's POP, and ASU therefore should not have charged the stipend to this award.
- In March 2014, ASU charged NSF Award No. [REDACTED] for 17 scholarships of \$2,000 each, for a total of \$34,000. We reviewed the scholarships and determined that only 16 of them related to this award. ASU therefore should not have charged \$2,000 of the costs to this award.¹⁶
- On July 31, 2014, the final day of the POP for NSF Award No. [REDACTED], ASU awarded a \$5,989 stipend to a graduate student to support the student during the

¹⁴ The draft report that we provided to ASU questioned \$592,067 of the \$605,502 in funding awarded to GTRC, allowing only the \$26,560 awarded through Amendment No. 002.

¹⁵ Both 2 CFR 220 and 2 CFR 200 state that a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to that cost objective in accordance with the relative benefits received.

¹⁶ ASU appears to have charged the additional stipend to this award solely because funding was not available on other sources. This is unallowable per 2 CFR §200.405(c) and 2 CFR 220, Appendix A, Section C.4.b., which state that organizations may not shift costs to meet deficiencies caused by overruns or other fund considerations, or for other reasons of convenience.

upcoming 2014-2015 academic year and charged the expense to this award. The graduate student was not identified as a participant on the NSF award. Although ASU issued the stipend letter during the award's POP, the stipend does not appear to have supported work performed on the award during the award's POP, and ASU therefore should not have charged the stipend to this award.

- On August 31, 2015, the final day of the POP for NSF Award No. [REDACTED], ASU awarded a \$2,485 stipend to a graduate student and charged the expense to this award. The graduate student was not identified as a participant on the NSF award. Although ASU issued the stipend letter during the award's POP, the stipend does not appear to have supported work performed on the award during the award's POP, and ASU therefore should not have charged the stipend to this award.
- In March 2014, ASU charged NSF Award No. [REDACTED] for \$4,416 in direct costs incurred for a student's Spring 2014 tuition. The sampled expense covered the student's tuition costs for the period from January 13 to May 2, 2014; however, because the NSF award expired on February 28, 2014, approximately 58 percent of the days included in the spring semester occurred after the award's POP (63 days/109 days). As a result, ASU should not have charged \$2,552 of this expense to the NSF award.
- In October 2016, ASU charged NSF Award No. [REDACTED] for \$1,000 in direct costs incurred for a student's Fall 2016 tuition. The sampled expense covered the student's tuition costs for the period from August 18 to December 10, 2016; however, because the NSF award expired on September 30, 2016, approximately 62 percent of the days included in the fall semester occurred after the award's POP (71 days/114 days). As a result, ASU should not have charged \$623 of this expense to the NSF award.

- ***Other Expenses***

ASU did not allocate other expenses to NSF awards based on the relative benefits received by the awards charged. Specifically:

- In March 2015, ASU charged NSF Award No. [REDACTED] for \$3,660 in publication expenses related to publishing an article in the Oxford University Press. Because ASU did not identify the published article in the annual report submitted for this NSF award and the article did not identify the NSF award as a sponsor for the research,¹⁷ ASU should not have charged the publication expense to this award.

¹⁷ Specifically, the article noted that the research was supported by a grant from CureSMA (JPA). NSF Proposal and Award Policies and Procedures Guide (PAPPG) 11-1, Part II, Chapter V, Section B.7.b. states, "Page charges for scientific and engineering journal publication are allowable where: (i) the research papers report work supported by NSF...."

- In October 2015, ASU charged NSF Award No. [REDACTED] for \$14,719 in materials and supplies purchased by the PI. Because the award's budget did not contain any funding for materials and supplies, we requested a justification explaining how these items benefitted the award. The PI reviewed our request and determined that the PI had erroneously posted the sampled materials to this award. ASU therefore should not have charged this expense to the NSF award.
- In February 2016, ASU charged NSF Award No. [REDACTED] for \$2,700 in travel expenses incurred for six individuals to attend a seminar hosted by the International Water Management Institute (IWMI) in October 2015. We reviewed the travel expenses and determined that ASU should only have charged five of the seminar participants' travel costs to the NSF award, as there was insufficient evidence to support that the sixth participant's travel was allocable to this award. As a result, ASU should not have charged \$465, or one seminar participant's travel costs, to the NSF award.

- ***Materials and Equipment***

When purchasing materials and equipment at the end of an award's POP, ASU did not allocate the expenses to NSF awards based on the relative benefits received by the awards charged. Specifically:

- On August 25, 2015, 6 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$12,342 in expenses incurred to purchase two computers and one graphics card. The PI stated that the team used the computers for grant-related purposes; however, it does not appear reasonable to charge the full cost of these expenses to this NSF award, as the materials would only have been available for a maximum of 6 days of the award's 4-year POP.
- On August 18, 2015, 13 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$27,038 in expenses incurred to purchase wearable eye-tracking units. The team did not receive the equipment until September 2, 2015, after end of the award's POP. The PI stated that the wearable eye-tracking units were necessary for the successful completion of the project; however, it does not appear reasonable to charge the full cost of the expenses to this NSF award, as the materials were not available during the award's POP.
- On August 20, 2014, 11 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$5,026 in expenses incurred to purchase equipment such as a 15-inch MacBook and an Apple USB Superdrive. The PI stated that the team intended to use the laptop to continue performing work related to the award; however, it does not appear reasonable to charge the full cost of the expenses to this NSF award, as the materials would only have been available for a maximum of 11 days of the award's 4-year POP.

- On September 23, 2016, 7 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$3,577 in expenses incurred to purchase a Microsoft Surface and associated supplies. The PI stated that the team intended to use the Surface to expand the number of platforms on which it can perform grant-related research; however, it does not appear reasonable to charge the full cost of the expenses to this NSF award, as the materials would only have been available for a maximum of 7 days of the award’s 5-year POP.
- On May 29, 2014, 3 months before NSF Award No. [REDACTED] expired, the PI ordered a piece of equipment and indicated on the purchase order that ASU should charge \$10,000 of the cost to NSF Award No. [REDACTED]. ASU did not receive the equipment until October 2014, at which time it charged \$10,000 to NSF Award No. [REDACTED]. Although the PI ordered this equipment during the award’s POP, the team did not receive the equipment until after the end of the award’s POP. It therefore does not appear reasonable to charge the full cost of this expense to the NSF award.
- On January 23, 2015, 8 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$5,702 in expenses incurred to purchase “Testosterone ELISA” kits. The PI stated that the team intended to use the kits “to measure plasma hormones collected from study birds sampled in the lab and the field”; however, it does not appear reasonable to charge the full cost of the expenses to this NSF award, as the materials would only have been available for a maximum of 8 days of the award’s 5-year POP.
- On January 26, 2015, 5 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$8,346 in expenses incurred to purchase a replacement microplate reader. The PI stated that he required a microplate reader to analyze samples for his studies; however, it does not appear reasonable to charge the full cost of this expense to this NSF award, as the materials would only have been available for a maximum of 5 days of the award’s 5-year POP.
- On July 29, 2016, 2 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$3,670 in expenses incurred to purchase a wire bender. The PI stated that students can use the wire bender during grant-related outreach programs; however, it does not appear reasonable to charge the full cost of the expenses to this NSF award, as the materials would only have been available for a maximum of 2 days of the award’s 1.5-year POP. Further, the NSF PAPPG applicable to this specific award notes that a grantee typically should not purchase equipment in anticipation of grant expiration where there is little or no time left to use such items in the actual conduct of research.¹⁸

¹⁸ See NSF 15-1, PAPPG, Part II, Chapter V, Section A.2.c.

- On August 30, 2016, 1 day before NSF Award No. [REDACTED] expired, ASU charged the award for \$3,564 in expenses incurred to repair a centrifuge. The PI stated that the team used the centrifuge to perform grant-related research and that the repair was necessary to return the centrifuge to working order; however, it does not appear reasonable to charge the full cost of the repair to this NSF award, as the repairs took place 1 day before the end of the award's 4-year POP on a general piece of laboratory equipment that ASU had used, and would continue to use, to benefit multiple projects.
- On April 21, 2016, 9 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$5,275 in expenses incurred to purchase four computer tablets. The PI stated that students used the tablets to create animation elements for training resources designed for this award; however, it does not appear reasonable to charge the full cost of these expenses to this NSF award, as the materials would only have been available for a maximum of 9 days of the award's 4-year POP.
- On August 5, 2016, 26 days before NSF Award No. [REDACTED] expired, ASU charged the award for \$4,062 in expenses incurred to purchase two cameras. The PI stated that the team would use the cameras to monitor grant-related research; however, it does not appear reasonable to charge these expenses to this NSF award, as the materials would only have been available for a maximum of 26 days of the award's 6-year POP. Further, the PI's request to purchase the cameras stated, "I would like to make some materials and supplies purchases on XCS0654 to help spend out the remaining funds," which is unallowable per Federal regulations.¹⁹

ASU does not have proper controls in place to ensure that it always allocates costs to sponsored projects based on the relative benefits received by the awards. As a result, ASU charged NSF awards for expenses that were not reasonable, appropriate, or allocable to the awards charged. We are therefore questioning \$129,095 of inappropriately allocated expenses, as follows:

¹⁹ According to 2 CFR §200.405(c) and 2 CFR 220, Appendix A, Section C.4.b., costs may not be shifted to meet deficiencies caused by overruns or other fund considerations, or for other reasons of convenience.

Table 2. Expenses Not Appropriately Allocated to NSF Awards

Description	NSF Award No.	Fiscal Year	Questioned Costs
December 2013 Unallocable Stipend Expense		2014	\$8,000
March 2014 Unallocable Scholarship Expense		2014	2,000
July 2014 Unallocable Stipend Expense		2015	5,989
August 2015 Unallocable Stipend Expense		2016	2,485
March 2014 Partially Unallocable Tuition		2014	2,552
October 2016 Partially Unallocable Tuition		2017	623
March 2015 Unallocable Publication Expense		2015	3,660
October 2015 Materials Charged in Error		2016	14,719
February 2016 Unallocable Travel Expense		2016	465
August 2015 Unallocable Materials Expense		2016	12,342
August 2015 Unallocable Equipment Expense		2016	27,038
August 2014 Unallocable Materials Expense		2015	5,026
September 2016 Unallocable Materials Expense		2017	3,577
October 2014 Unallocable Equipment Expense		2015	10,000
January 2015 Unallocable Materials Expense		2015	5,702
January 2015 Unallocable Materials Expense		2015	8,346
July 2016 Unallocable Materials Expense		2017	3,670
August 2016 Unallocable Materials Expense		2017	3,564
April 2016 Unallocable Materials Expense		2016	5,275
August 2016 Unallocable Materials Expense		2017	4,062
Total Questioned Costs			<u>\$129,095</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Resolve the \$129,095 of questioned costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management controls and processes over allocating expenses to sponsored funding sources. Processes could include requiring PIs or other designated staff to document the allocation methodology used to charge expenses to sponsored projects, including a detailed justification for how they determined that the allocation methodology used was appropriate.
3. Direct ASU to strengthen the administrative and management controls and processes over purchasing equipment and materials/supplies at the end of a project’s POP. Processes could include requiring ASU to specifically review all equipment and materials/supplies purchased during the final 90 days of an award’s POP to evaluate whether the costs are

allocable in accordance with all relevant Federal and sponsor-specific regulations before charging the expenses to a sponsored project.

Arizona State University Response: ASU accepted this finding and agreed to repay any questioned costs not already refunded to NSF. ASU stated that while it offers training sessions and extensive materials related to fiscal compliance and best practices for sponsored projects, it would examine its current processes and work to strengthen its administrative and management controls and processes over allocating expenses to sponsored funding sources and over purchasing equipment and materials/supplies at the end of a project's POP.

Auditors' Additional Comments: Our position regarding this finding does not change.

Finding 3: Inappropriate Allocation of Indirect Costs

ASU inappropriately allocated \$56,720 of indirect costs to nine NSF awards, as follows:

- ***Indirect Costs Inappropriately Applied to Equipment Expenses***²⁰

ASU inappropriately accounted for equipment purchases as materials and supplies expenses; as a result, it inappropriately charged indirect costs to five NSF awards. Specifically:

- In July 2015, ASU charged NSF Award No. [REDACTED] for \$3,508 in indirect costs associated with the purchase of laboratory equipment.
- In May 2015, ASU charged NSF Award No. [REDACTED] for \$5,987 in indirect costs associated with the purchase of a custom-built computer workstation that should have been classified as equipment.
- In October 2015, ASU charged NSF Award No. [REDACTED] for \$2,888 in indirect costs associated with the purchase of a network analyzer that should have been classified as equipment.
- In November 2014, ASU charged NSF Award No. [REDACTED] for \$3,976 in indirect costs associated with the purchase of a component used to upgrade a piece of equipment.
- In July 2015, ASU charged NSF Award No. [REDACTED] for \$8,793 in indirect costs associated with the purchase of 1,400 acrylic shingles that the team used to construct a capitalized piece of equipment.

²⁰ According to 2 CFR 220, Appendix A, Section G.2; 2 CFR §200.68; and ASU's Negotiated Indirect Cost Rate Agreements (NICRAs) published from July 1, 2003, through July 1, 2016, equipment and capital expenditures are excluded from the Modified Total Direct Cost (MTDC) base.

- ***Indirect Costs Inappropriately Applied to Participant Support Costs*** ²¹

ASU did not appropriately identify and account for participant support costs (PSCs).²² As a result, it inappropriately charged indirect costs to two NSF awards. Specifically:

- In September 2016, ASU charged NSF Award No. [REDACTED] for \$1,039 in indirect costs associated with PSCs incurred to host a working dinner for participants of a grant-related workshop.
- In June 2016, ASU charged NSF Award No. [REDACTED] for \$7,924 in indirect costs associated with PSCs incurred to provide lodging for conference participants.
- In July 2016, ASU charged NSF Award No. [REDACTED] for \$478 in indirect costs associated with PSCs incurred to support a graduate student's attendance at a microscopy school in June 2016.

- ***Indirect Costs Mistakenly Charged to NSF Awards***

ASU inappropriately charged indirect costs to two NSF awards due to errors or mistakes. Specifically:

- In March 2015, ASU charged NSF Award No. [REDACTED] for \$15,750 in indirect costs related to a corporation's membership in ASU's NSF Industry/University Cooperative Research Center. Because ASU paid for the corporation's membership in the Industry/University Cooperative Research Center using supplemental funding that did not include support for indirect costs, ASU should not have applied indirect costs to the membership expense.
- In July 2016, ASU erroneously charged NSF Award No. [REDACTED] for \$12,754 in indirect costs when it should only have charged \$6,377. Specifically, ASU mistakenly applied indirect costs of \$6,377 to the award twice, resulting in unallowable indirect costs.

ASU does not have sufficient policies and procedures in place to consistently ensure that it does not apply indirect costs to capitalized equipment, PSCs, and other costs that should not be included in the MTDC base. For instance, ASU misclassified equipment expenses as materials and supplies in its general ledger because ASU posts purchase card expenses to general ledger accounts that are included in the Modified Total Direct Cost (MTDC) base by default. Consequently, all equipment purchased using a purchase card is included in the MTDC base and assigned indirect costs unless ASU manually performs a cost transfer.

²¹ Applicable NSF PAPPGs (NSF 10-1 and NSF 11-1) state that indirect costs are generally not allowed on participant support costs.

²² ASU budgeted the funding to support each of these expenses as PSCs, and each expense related to costs incurred to host workshop/conference participants. As such, ASU should have accounted for these costs as PSCs.

We are therefore questioning \$56,720 of inappropriately applied indirect costs, as follows:

Table 3. Inappropriate Allocation of Indirect Costs

Description	NSF Award No.	Fiscal Year	Questioned Costs
July 2015 Indirect Costs Applied to Equipment		2016	\$3,508
May 2015 Indirect Costs Applied to Equipment		2015	5,987
October 2015 Indirect Costs Applied to Equipment		2016	2,888
November 2014 Indirect Costs Applied to Equipment		2015	3,976
July 2015 Indirect Costs Applied to Equipment		2016	8,793
September 2016 Indirect Costs Applied to PSCs		2017	1,039
June 2016 Indirect Costs Applied to PSCs		2016	7,924
July 2016 Indirect Costs Applied to PSCs		2017	478
March 2015 Indirect Costs Not Included in Supplemental Funding		2015	15,750
July 2016 Indirect Costs Double-Charged		2017	6,377
Total Questioned Costs			<u>\$56,720</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Resolve the \$56,720 of questioned costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management controls and processes over applying indirect costs to Federal awards. Processes could include:
 - a. Developing new policies and procedures that require ASU to manually review all purchase card purchases that exceed \$5,000 to ensure that it has not erroneously included capitalized equipment in the MTDC base.
 - b. Developing new policies and procedures that require ASU to annually review all project accounts set up for NSF awards that include funding for PSCs, as well as for any other expenses that should be excluded from MTDC, to ensure that ASU appropriately excludes these costs from the MTDC base.

Arizona State University Response: ASU partially concurred with this finding and stated that it would strengthen its administrative and management controls and processes over applying indirect costs to Federal awards and stated that it would repay \$47,757 of the questioned indirect

costs. However, it disagreed with \$8,963 of the questioned indirect costs related to NSF Award No. [REDACTED]. Specifically, ASU did not concur with our finding or recommendation to repay:

- \$1,039 of questioned costs related to a working dinner.
- \$7,924 of questioned costs related to lodging.

ASU asserted that the direct costs related to the dinner and lodging expenses were not PSCs, and that the award account from which ASU had expended the funding for these expenses did not include funding related to PSCs. ASU stated that it had segregated funds for PSCs under this grant in a separate account in its financial system, and that it did not budget or assess indirect cost charges for this account. In addition, ASU stated that the attendees at the workshop and event did not qualify as participants as defined by NSF, and that ASU therefore had not inappropriately charged indirect costs related to the expenses.

Auditors' Additional Comments: Our position regarding this finding does not change. Specifically:

- ASU stated in its formal response that the \$1,039 in questioned dinner expenses was for participants in an [REDACTED] workshop, and that NSF had awarded the funding for this workshop in the final funding supplement on NSF Award No. [REDACTED]. We reviewed the funding supplement and verified that the budget included PSC funding for two participant dinners during this workshop. Therefore, ASU should have accounted for these costs as PSCs.
- ASU stated in its formal response regarding the \$7,924 in questioned indirect costs for lodging expenses that the relevant direct lodging expenses did not relate to PSCs; however, ASU had previously indicated that it had accounted for a portion of the lodging expenses for that event as PSCs. When we requested a justification for the methodology used to split these expenses between different accounts, ASU stated that it used the PSC fund until the fund was exhausted, then allocated the remaining expenses to the non-PSC fund. Because ASU incurred all of the lodging expenses for the same purpose and because it appears that ASU would have charged the full amount as PSCs if adequate PSC funding had been available, we determined that ASU should have accounted for these costs as PSCs.

Finding 4: Unsupported Expenses

ASU was unable to adequately support \$41,553 of sampled expenses charged to NSF awards during the audit period, as follows:

- ***Insufficient Documentation to Support Costs***
 - In February 2014, after NSF Award No. [REDACTED] had expired, ASU charged the award for \$15,848 that ASU claimed it had incurred to support grant and scholarship expenses. However, this amount did not represent actual costs incurred; instead, ASU calculated the amount based on the total funding left on the award after the award expired on January 31, 2014. Because ASU was unable

to provide any support for the costs charged, we concluded that the full amount of this expense is unsupported.

- In August 2016, the final month of NSF Award No. [REDACTED]'s 6-year POP, ASU charged the award for \$15,250 incurred to sponsor a grant-related conference. ASU was unable to provide any receipts to support this charge; it only provided a cost transfer form indicating that it had transferred the funds from its Center for Nanotechnology to its College of Law. Because ASU was unable to provide documentation of the actual costs incurred or an agreement that supported how ASU intended to use the funding, we concluded that the full amount of this expense is unsupported.²³
- In June 2016, 2 months after the end of NSF Award No. [REDACTED]'s 5-year POP, ASU charged the award for \$3,250 to pay an invoice that the University of Alaska had submitted to ASU for costs incurred to host a grant-related meeting in the final month of the award's POP. The budget for this NSF award included support for this meeting; however, the invoice provided does not include sufficient detail to enable us to evaluate how the University of Alaska calculated the invoiced amount or why this amount was reasonable. Because ASU was unable to provide itemized receipts, a subcontract, or a consulting agreement with the University of Alaska to support the invoice, we were unable to determine whether the invoiced expenses are appropriate. We therefore concluded that the full amount of this expense is unsupported.
- In January 2014, ASU charged NSF Award No. [REDACTED] for \$3,202 in direct costs purportedly paid via PayPal to purchase a drone. The budget for this NSF award included funding to purchase unmanned aerial vehicles; however, ASU was unable to provide adequate supporting documentation to enable us to determine if or how this expense benefitted the award, or if the costs invoiced were reasonable. We are therefore questioning all costs associated with this transaction.
- In January 2015, ASU charged NSF Award No. [REDACTED] for \$2,630 in expenses incurred for services provided by a consulting firm; however, ASU was unable to provide adequate support for the invoiced services, as it did not enter into a formal consulting arrangement with the consulting firm.²⁴ Without proper documentation, we were unable to determine if or how this expense benefitted the award, or if the costs invoiced were reasonable. We therefore concluded that the full amount of this expense is unsupported.

²³ In response to this finding, ASU provided receipts supporting that it had incurred \$15,245 to host the conference; however, we are unable to confirm that ASU used the funds transferred to pay the conference expenses based on the documentation provided.

²⁴ The budget for this NSF award included funding for services provided by this consultant; however, we were unable to confirm that the invoiced services were reasonable and that they related to the work budgeted, as described above.

- In February 2016, ASU charged NSF Award No. [REDACTED] for \$4,118 in travel expenses incurred to attend a grant-related conference; however, ASU was unable to provide documentation to support a \$1,068 airfare expense included in the total. Because we are unable to identify the traveler that incurred the airfare and cannot confirm that the expense was reasonable, allocable, or allowable under this award, we concluded that \$1,068 of this expense is unsupported.
- ***Credits Not Properly Reimbursed to NSF Awards***
 - In February 2014, ASU charged NSF Award No. [REDACTED] for \$1,861 in expenses incurred to purchase equipment. Later in the month, ASU received a \$193 credit from the vendor for sales tax that the vendor had inappropriately applied to the equipment purchase; however, ASU did not reimburse NSF for this credit. We therefore concluded that \$193 of this expense is unsupported.
 - In March 2014, ASU charged NSF Award No. [REDACTED] for \$5,912 in airfare expenses incurred for two students to travel to Nepal to conduct grant-related research. Due to a number of flight changes, the total costs incurred for this flight decreased by \$757; however, ASU only reimbursed NSF for \$645 of this amount. We therefore concluded that \$112 of this expense is unsupported.

According to 2 CFR 220, Appendix A, Section C.4, and 2 CFR §200.405, a cost is only allocable to a particular cost objective if the goods or services involved are chargeable or assignable to the cost objective in accordance with the relative benefits received or other equitable relationship. In addition, according to 2 CFR §200.403, organizations must adequately document costs for the costs to be allowable under Federal awards. Moreover, according to NSF PAPPG 11-1 and 14-1, Part II, Chapter V, Section A, expenditures under NSF cost-reimbursement grants are governed by Federal cost principles, and grantees are responsible for ensuring that all costs charged to NSF awards meet the requirements of the applicable cost principles.

ASU does not have sufficient policies and procedures in place to ensure that (a) it appropriately applies credits received to the funding source(s) to which it charged the original expenses, and (b) it retains sufficient documentation to support the allowability of costs charged to Federal awards. As a result, ASU charged NSF awards for expenses that it was unable to adequately support as allowable under the awards. We are therefore questioning \$41,553 of unsupported expenses, as follows:

Table 4. Unsupported Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
February 2014 Unsupported Scholarship Expense	[REDACTED]	2014	\$15,848
August 2016 Unsupported Conference Expense	[REDACTED]	2017	15,250
June 2016 Unsupported Meeting Expense	[REDACTED]	2016	3,250
January 2014 Unsupported Materials Expense	[REDACTED]	2014	3,202
January 2015 Unsupported Consulting Expense	[REDACTED]	2015	2,630
February 2016 Unsupported Travel Expense	[REDACTED]	2016	1,068

Description	NSF Award No.	Fiscal Year	Questioned Costs
February 2014 Tax Credit Not Reimbursed		2014	193
March 2014 Airfare Credit Not Fully Reimbursed		2014	112
Total Questioned Costs			<u>\$41,553</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Resolve the \$41,553 of unsupported costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management procedures over allocating expenses to sponsored projects. Procedures could include periodic reviews of transactions likely to include unreimbursed credits, such as equipment and travel, to ensure that ASU does not overcharge sponsored projects.
3. Direct ASU to strengthen the administrative and management controls and processes over charging expenses to NSF awards. Processes could include:
 - a. Ensuring that ASU adequately supports all costs transferred to sponsored projects with documentation that states how ASU used or will use the funding.
 - b. Updating ASU's policies and procedures to state that ASU can only reimburse invoices for consultants and/or subawardees that have active consulting or subaward agreement(s) with ASU.
 - c. Requiring all subawardees to provide itemized invoices that support how they calculated the invoiced costs.

Arizona State University Response: ASU partially concurred with this finding and stated that it would strengthen its administrative and management controls and processes over charging expenses to Federal awards, and that it would repay \$10,460 of the questioned costs. However, ASU disagreed with \$31,093 of the questioned costs, as follows:

- NSF Award No. [REDACTED] ASU did not concur with the finding that it had incurred \$15,848 of unsupported scholarship expenses as a result of not maintaining sufficient documentation to support costs, nor did it concur with our recommendation that it should repay the questioned costs. Specifically, ASU asserted that the journal entry selected for audit represented a charge in arrears for a portion of the actual scholarship costs incurred, and that it had provided the supporting documentation underlying the journal entry, including a list of recipients and amounts.

- NSF Award No. [REDACTED] ASU did not concur with the finding that it had incurred \$15,250 in unsupported conference expenses, nor did it concur with our recommendation that it should repay the full amount of questioned costs. Specifically, ASU asserted that the expense related to a journal entry to reimburse the ASU College of Law for conference expenses that it had incurred on behalf of the ASU Center for Nanotechnology, and that the College of Law was able to provide detailed receipts to support \$15,245 of the amount received. ASU therefore agreed to repay the \$5 of remaining unsupported expenses.

Auditors' Additional Comments: Our position regarding this finding does not change. Specifically:

- In response to our request for documentation to support the \$15,848 of grant/scholarship expenses charged to NSF Award No. [REDACTED], ASU provided documentation supporting that it had performed a cost transfer, including an e-mail dated February 6, 2014, or 6 days after the award had expired, requesting that the \$15,848 remaining on the award be transferred to a Computer Science, Engineering, and Math scholarship account to “cover the deficit in the item type from the 2013-2014 scholarships.” ASU also provided a list identifying \$83,148 of stipends awarded to 22 students. This documentation supports that ASU performed a cost transfer; however, it does not support the actual use of the \$15,848 charged to this award. We are therefore unable to ensure that ASU used the funding to support allocable, reasonable, and allowable expenses.
- In response to our request for documentation to support the \$15,250 of conference expenses charged to NSF Award No. [REDACTED], ASU provided documentation to support that the ASU Center for Nanotechnology transferred \$10,000 to the ASU College of Law on August 5, 2016, or 26 days before the end of the award’s POP, to support the College of Law’s Fourth Annual Conference on the Governance of Emerging Technologies (GET), which ASU held from May 24 through 26, 2016. ASU was able to provide receipts to support \$15,245 of GET conference expenses in response to our audit; however, we are unable to verify that ASU used the \$10,000 transferred to the College of Law to support the expenses documented by the receipts. Because ASU did not base the amount transferred on actual expenses and the Center for Nanotechnology and the ASU College of Law did not enter into an agreement regarding how the ASU College of Law would spend this funding, we are unable to ensure that ASU used the funding to support allocable, reasonable, and allowable expenses.

Finding 5: Inappropriate Subaward Payment

ASU inappropriately charged a subaward payment to an NSF award. Specifically, in August 2016, ASU charged NSF Award No. [REDACTED] for \$32,582 to pay a July 2016 invoice from the National Autonomous University of Mexico (UNAM) that included a list of expenses that UNAM anticipated incurring during the period from August 2016 through January 2017. The budget for the NSF award included funding to support this subaward; however, the subaward contract stated that, aside from the initial advance payment of \$38,000, all payments on this subaward were to be made on a milestone basis and were to be in support of actual costs

incurred. Because UNAM did not base its invoice on actual costs in accordance with the milestone schedule outlined in the contract and did not provide ASU with support indicating how it actually spent the advance payment, ASU should not have paid the invoice or charged the expense to NSF.

ASU does not have sufficient policies and procedures in place to ensure that it appropriately reimburses subaward expenses in accordance with the terms and conditions of the subaward, or that it receives support for actual expenditures to indicate how the subawardees used any advance payments provided. We are therefore questioning \$32,582 of inappropriate subaward payments, as follows:

Table 5. Inappropriate Subaward Payment

Description	NSF Award No.	Fiscal Year	Questioned Costs
Inappropriate Subaward Payment		2017	\$32,582

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Resolve the \$32,582 of questioned costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management procedures over allocating subaward expenses to sponsored projects. Procedures could include:
 - a. Requiring subaward invoice approvers to review the terms and conditions of the subaward contract to confirm that the subawardee billed the costs appropriately before approving subawardee invoices.
 - b. Requiring periodic training for PIs and other employees involved in reimbursing subaward expenses or charging the expenses to Federal awards.

Arizona State University Response: ASU did not concur with this finding and our recommendation to repay the \$32,582 in questioned costs. ASU stated that Term 1 of the subaward terms and conditions specifies a cost-reimbursable subaward; however, this describes the contract type, not the mechanism of payment. The mechanism of payment is instead described in Term 2, along with the determination of payment amount. Term 2 states that ASU will make payments on a milestone basis throughout the award period, in accordance with the terms of the subaward.

ASU asserted that, although the wording of the milestones-deliverables schedule could be improved, based on the target dates and associated verbiage in the schedule, the intention was to

make all interim payments based on a projection of expenses (i.e., in advance) and that the invoices submitted by UNAM and paid by ASU were therefore appropriate.

ASU further stated that it received support for UNAM's actual expenditure of the \$32,582 advance in UNAM's invoice dated December 6, 2016, as required by the subaward contract terms. UNAM's December 2016 invoice requested that ASU provide an advance payment to cover the period from January through May 2017 and reported the actual expenditures incurred during the period for which ASU had advanced the previous \$32,582 in funding.

In addition, ASU stated that, according to the PI, unlike in most institutions in the United States, UNAM is unable to approve project expenditures until it physically receives the funds. UNAM's system is designed such that no researcher can incur expenses until they receive the related funding. The researchers then submit invoices indicating the expenditures to date and their expected expenditures beyond the funds already advanced. ASU stated that this was clearly understood by both parties to the subaward and reflected in the subaward contract as described.

As a result, ASU asserted that the invoices and payments were as anticipated and described in the subaward agreement, were appropriate for ASU to pay and charge to NSF, and represent allowable costs.

Auditors' Additional Comments: ASU stated that it eventually received support for the costs that UNAM incurred; however, ASU did not provide this documentation during the audit engagement, and the initial payment was not in accordance with the grant's terms and conditions. Specifically, the payment terms and conditions included in Term 2 of the subaward agreement referenced by ASU state that ASU "shall reimburse [UNAM] for allowable costs based on invoices submitted in accordance with the terms of this Subaward." Because the subaward indicated that UNAM would incur costs and then receive reimbursement from ASU, ASU's initial payment was inappropriate because it provided the reimbursement before UNAM incurred the costs. As a result, our position regarding this finding does not change

Finding 6: Unallowable Expenses

ASU charged \$22,418 of unallowable expenses to eight NSF awards, as follows:

- ***Unallowable Pre-Award Expenses***²⁵

ASU inappropriately charged unallowable pre-award expenses to an NSF award. Specifically, in June 2015, ASU charged NSF Award No. [REDACTED] for \$1,719 in expenses incurred for lab services provided by the Keck Laboratory in June, July, and August 2014. Because this NSF award did not become effective until August 2015, ASU should not have charged the award for services provided in June, July, and August 2014.

²⁵ NSF PAPPG 15-1, Part II, Chapter V, Section A.2.b. states that NSF must approve costs incurred more than 90 days before the start date of a grant.

- ***Unallowable Entertainment-Related Expenses*** ²⁶

ASU inappropriately charged unallowable entertainment-related expenses to two NSF awards. Specifically:

- In February 2014, ASU charged NSF Award No. [REDACTED] for \$2,107 in expenses incurred to purchase aprons for industry members, faculty, and students to use in a teambuilding activity that revolved around cooking. Because ASU appears to have purchased these aprons to benefit an event that would be considered entertainment and/or a social activity, it should not have charged these costs to the NSF award.
- In June 2016, ASU charged NSF Award No. [REDACTED] for \$250 in expenses incurred to obtain bartending services for a grant-related conference. Because this cost related to a cash bar that served alcohol, it represents an unallowable entertainment/alcohol expense. ASU therefore should not have charged this cost to the NSF award.

- ***Unallowable Travel Expenses***

ASU inappropriately charged unallowable travel expenses to three NSF awards. Specifically:

- In [REDACTED], ASU charged NSF Award No. [REDACTED] for \$4,833 in expenses that the PI incurred to travel to [REDACTED] to disseminate grant-related results at an international conference. The travel appears to have benefitted the objectives of this award; however, the PI did not comply with the *Fly America Act*²⁷ on the two flights for which he was required to do so. Under the Act, the PI was required to use a U.S. flag carrier for these flights; however, he used [REDACTED], which is not a U.S. flag carrier. We therefore determined that the portion of the travel expenses related to the [REDACTED] flights, or \$2,413, is unallowable.
- In [REDACTED], ASU charged NSF Award No. [REDACTED] for \$15,094 in direct costs²⁸ incurred to provide lodging for conference participants at a rate of \$189 per room, plus tax. However, the lodging per diem rate allowed by ASU policy

²⁶ NSF PAPPG 09-1 and 15-1, Part I, Chapter II, Section C.2.g.(xii)(a) and (c) state that costs related to entertainment, diversion, social activities, and alcoholic beverages are unallowable.

²⁷ ASU's Travel Policy Standard 3 and NSF PAPPG 09-1 and 10-1, Part II, Chapter VI, Section G.1.b. both state that travelers must comply with the *Fly America Act*, which requires travelers to use U.S. flag carriers if they are traveling on funds provided by the Federal government.

²⁸ ASU also inappropriately charged indirect costs to this expense; however, we previously questioned these costs in Finding 2 and are therefore not questioning them in this finding.

was \$89 per room, plus tax.²⁹ We therefore determined that the difference between the claimed per diem rate and the allowable per diem rate, or \$7,991³⁰, is unallowable.

- In March 2015, ASU charged NSF Award No. [REDACTED] for \$38,363 in expenses incurred to provide lodging for conference participants. The lodging rate for each night varied based on the type of room provided; however, in each case the lodging rate was higher than the allowable lodging rate per ASU's policy.³¹ We therefore determined that the difference between the claimed per diem rate and the allowable per diem rate, or \$6,855, is unallowable.
- In March 2014, ASU charged NSF Award No. [REDACTED] for \$6,813 in expenses incurred for the PI to attend a grant-related conference in [REDACTED]. The majority of the expenses incurred for this trip appear to be allowable; however, the PI inappropriately claimed a meals and incidental expense (M&IE) per diem rate of \$137 per day (the Department of Defense (DOD) per diem rate for "Other" locations in [REDACTED]), rather than the \$114 per day (the DOD per diem rate for the island of [REDACTED]) allowable per ASU's policy.³² We therefore determined that the difference between the claimed per diem rate and the actual per diem rate, or \$316, is unallowable.

- ***Unallowable Salary Expenses***³³

ASU inappropriately used the salary rate budgeted in the award proposal rather than the employee's actual salary rate when calculating salary expenses charged to two NSF awards. Specifically:

- In November 2015, ASU charged NSF Award No. [REDACTED] for \$45,010 in salary expenses for the PI of this award. The PI certified that this effort related to this NSF award; however, ASU inappropriately charged the award for the amount budgeted for the PI's summer salary in year two of the project, rather than for the PI's actual salary based on their salary agreement. If ASU had used the PI's annual salary agreement when calculating the amount of this payment, it would only have charged \$44,360 to this award. We therefore determined that \$650 of this expense is unallowable.
- In July 2016, ASU charged NSF Award No. [REDACTED] for \$16,160 in salary expenses incurred during June 2016 for an investigator on this award. The

²⁹ ASU's Financial Services Manual, Section 509 establishes allowable per diem rates for meals and lodging.

³⁰ \$15,094 Direct lodging expenses charged to the award - \$7,103 of allowable hotel expenses [\$101.47 (\$89 approved nightly room rate +12.47 allowable nightly room tax)* 70 Nights] = \$7,991

³¹ ASU's Financial Services Manual, Section 509 establishes allowable per diem rates for meals and lodging.

³² ASU's Business and Finance Per Diem Rates guidance notes that DOD per diem rates should be used for travel to Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands.

³³ According to 2 CFR 220, Appendix A, Section J.10.d.(2)(a) and 2 CFR §200.430, charges for work performed by faculty members on Federal awards cannot exceed the proportionate share of the employee's Institutional Base Salary (IBS) for the period.

employee certified that this effort related to this NSF award; however, ASU inappropriately charged the award for the amount budgeted for the investigator’s summer salary in year one of the project, rather than for the investigator’s actual salary based on their salary agreement. If ASU had used the investigator’s annual salary agreement when calculating the amount of this payment, it would only have charged \$16,043 to this award. We therefore determined that \$117 of this expense is unallowable.

ASU does not have sufficient policies and procedures in place to ensure that it only charges allowable costs to NSF awards. As a result, ASU inappropriately charged unallowable pre-award, entertainment, travel, and salary expenses to NSF awards. We are therefore questioning \$22,418 of expenses, as follows:

Table 6. Unallowable Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
June 2015 Unallowable Pre-Award Expense		2015	\$1,719
February 2014 Unallowable Entertainment-Related Expense		2014	2,107
June 2016 Unallowable Alcohol Expense		2016	250
August 2014 Unallowable Airfare Expense		2015	2,413
June 2016 Unallowable Lodging Expense		2016	7,991*
March 2015 Unallowable Lodging Expense		2015	6,855
March 2014 Unallowable Per Diem Expense		2014	316
November 2015 Unallowable Salary Expense		2016	650
July 2016 Unallowable Salary Expense		2017	117
Total Questioned Costs			<u>\$22,418</u>

Source: Auditor summary of questioned transactions.

*Because we previously questioned the indirect costs related to this transaction in Finding 2, we did not include them here.

Recommendations

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Resolve the \$22,418 of questioned costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management procedures over allocating pre-award expenses to sponsored projects. Procedures could include requiring that ASU review all pre-award transactions before charging the expenses to a federally sponsored project.

3. Direct ASU to strengthen the administrative and management procedures over allocating entertainment-related expenses to sponsored projects. Procedures could include periodic reviews of transactions with high-risk descriptions to ensure that ASU does not charge entertainment-related expenses to federally sponsored projects.
4. Direct ASU to strengthen the administrative and management procedures over allocating travel expenses to sponsored projects. Procedures could include requiring that ASU:
 - a. Review all foreign airfare purchases for compliance with the *Fly America Act* before charging the expenses to a federally sponsored project.
 - b. Perform periodic reviews of transactions involving per diem rates to ensure that it does not overcharge sponsored projects.
5. Direct ASU to strengthen the administrative and management procedures over allocating salary expenses to sponsored projects. Procedures could include updating ASU's policies and procedures to require that ASU use an employee's salary agreement when calculating all salary expenses charged to sponsored awards.

Arizona State University Response: ASU accepted this finding and agreed to repay any questioned costs not already refunded to NSF. ASU stated that while it offers training sessions and extensive materials to PIs, Department Research Advancement Administrators, and Central Grant and Contract Officers related to fiscal compliance and best practices for sponsored projects, it would examine its current processes and work to strengthen the administrative and management procedures over allocating pre-award expenses, entertainment-related expenses, travel expenses, and salary expenses to sponsored projects.

Auditors' Additional Comments: Our position regarding this finding does not change.

Finding 7: Unreasonable Travel Expenses

ASU charged unreasonable travel expenses to an NSF award. Specifically:

- In [REDACTED], the co-PI of NSF Award No. [REDACTED] traveled (a) from Phoenix, Arizona to [REDACTED] to conduct research that was not related to an NSF award, then (b) from [REDACTED], to [REDACTED], to present research related to this NSF award, then (c) from [REDACTED], to [REDACTED], for personal travel, and then (d) from [REDACTED], back to Phoenix, Arizona. ASU appears to have appropriately accounted for the additional expenses that the co-PI incurred as a result of the (a) leg of this trip; however, it does not appear to have accounted for the significant increase to the cost of the return portion of this trip as a result of the co-PI flying from [REDACTED] to [REDACTED] rather than from [REDACTED] to Phoenix.³⁴ Because the cost of stopping in [REDACTED] does not appear to have been reasonable based on ASU's price comparison, and because ASU did

³⁴ According to ASU's Travel Policy Standard 12, ASU will reimburse travelers for only those expenses that they would have incurred had no personal travel component existed.

not obtain an appropriate estimate for the business portion of this flight, we determined that \$5,138 of the costs charged to this award for the (c) leg of this trip were unreasonable.

ASU does not have sufficient policies and procedures in place to ensure that personnel traveling for both business and personal purposes only charge sponsors for costs related to the business purpose of the trip. As a result, ASU charged unreasonable travel expenses to an NSF award. We are therefore questioning \$5,138 of unreasonable travel expenses, as follows:

Table 7. Unreasonable Travel Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
Additional Costs Incurred for Personal Travel		2016	<u>5,138</u>
Total Questioned Costs			<u>\$5,138</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Resolve the \$5,138 of questioned costs and direct ASU to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct ASU to strengthen the administrative and management procedures over allocating travel expenses to sponsored projects. Procedures could include requiring award participants to provide constructive airfare for all travel requests that include personal travel and reviewing the constructive airfare to ensure that ASU only charges sponsored projects for costs associated with the business purpose of the award.

Arizona State University Response: ASU accepted this finding and agreed to repay any questioned costs not already refunded to NSF. ASU stated that while it offers training sessions and extensive materials to PIs, Department Research Advancement Administrators, and Central Grant and Contract Officers related to fiscal compliance and best practices for sponsored projects, it would examine its current processes and work to strengthen the administrative and management procedures over allocating travel expenses to sponsored projects.

Auditors’ Additional Comments: Our position regarding this finding does not change.

Finding 8: Inappropriate Application of Proposed Indirect Cost Rates

ASU applied inappropriate indirect cost rates to direct expenses accumulated on 17 NSF awards. For each of these awards, ASU applied the Negotiated Indirect Cost Rate Agreement (NICRA) rate that was in effect at the time that ASU submitted its proposal for the award, rather than the

NICRA rate that was applicable as of the effective date of the NSF award. As a result, ASU applied an indirect cost rate that was lower than was the approved NICRA rate.

According to 2 CFR 220, Appendix A, Section G.7, and 2 CFR 200, Appendix III, Section C.7, when identifying and computing indirect costs at Institutions of Higher Education (IHEs), NSF must use the negotiated rates in effect at the time of the initial award throughout the life of the award. Accordingly, NSF does not permit IHEs to adjust award levels during an award’s POP as a result of changes in the negotiated rates quoted in the applicable Federal guidance per NSF’s PAPPGs.³⁵

ASU did not have sufficient policies and procedures in place to ensure that it calculated indirect costs using the NICRA rates that applied during the period in which the NSF awards became effective, rather than the rates that applied when ASU submitted its proposal or received the award. As a result, ASU applied inappropriate indirect cost rates to direct expenses accumulated on the awards shown in the table below.

Table 8. Inappropriate Application of Proposed Indirect Cost Rates

NSF Award No.	Award Effective Date	Appropriate Rate	Rate Applied
		54.00%	52.50%
		54.00%	52.50%
		54.00%	52.50%
		50.50%	49.50%
		52.50%	50.00%
		54.00%	52.50%
		54.00%	52.50%
		54.50%	23.51%
		54.00%	52.50%
		54.00%	51.00%
		54.00%	52.50%
		54.00%	52.50%
		54.50%	54.00%
		54.00%	52.50%
		54.00%	52.50%
		54.00%	52.50%
		54.00%	52.50%

Source: Auditor summary of identified instances of non-compliance.

This issue did not result in any questioned costs; however, without policies and procedures in place to ensure that ASU uses the appropriate indirect cost rate, it is possible that ASU may overcharge sponsoring organizations for indirect costs in the future. We are therefore noting a compliance exception.

³⁵ See Chapter V, Section D.1.ii.b. of NSF PAPPGs 07-140 and 11-1, and Chapter V, Section D.1.b. of PAPPGs 15-1 and 16-1.

Recommendation

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Direct ASU to strengthen the administrative and management controls and processes over establishing indirect cost rates for Federal awards to ensure that it applies costs at the rates in effect when the sponsoring organization awards the grant.

Arizona State University Response: ASU acknowledged that in the cited instances, it applied an indirect cost rate that was lower than the NICRA rate applicable as of the effective date of the NSF award. However, ASU asserted that, although it is authorized to use the NICRA rate applicable as of the effective date of an NSF award, it is also allowed to use a rate lower than the approved NICRA rate, and that it may do so intentionally, rather than as the result of an oversight. ASU stated that it would examine its current processes and confirm the strength of its administrative and management controls and processes over establishing indirect cost rates for Federal awards to ensure that it applies costs at a rate no greater than the rates in effect when the sponsoring organization awards the grant.

Auditors' Additional Comments: Our position regarding this finding does not change.

Although not expressly stated within prior NSF PAPPGs, NSF has added new language to recently published PAPPGs that expressly prohibits the use of a lower indirect cost rate. For example, NSF PAPPG 17-1, Part I, Chapter II, Section C.2.g.(viii) states, "Use of an indirect cost rate lower than the organization's current negotiated indirect cost rate is considered a violation of NSF's cost sharing policy." Accordingly, we maintain that ASU is not authorized to apply a rate lower than the approved NICRA rate.

Finding 9: Non-Compliance with ASU Policies

ASU did not comply with its own internal policies and procedures when incurring costs for NSF awards, as follows:

- ***Failure to Submit Travel Expense Reports on Time*** ³⁶

We identified seven instances in which employees did not submit travel reimbursement documentation within the required time period after completing travel. Under ASU's travel policies, travelers must submit an expense report within 30 days of completing a trip; however, ASU does not have appropriate procedures in place to ensure that it enforces this policy.

- ***Failure to Obtain Prior Authorization for Travel*** ³⁷

³⁶ ASU Travel Policy Standard 1: Roles and Responsibilities states that travelers are responsible for submitting and certifying expense reports within 30 days of the trip end date.

³⁷ ASU Travel Policy Standard 1: Roles and Responsibilities states that travelers are responsible for obtaining appropriate authorizations before beginning travel or incurring expenses.

We identified seven instances in which ASU employees did not obtain prior authorization for travel. Under ASU's travel policies, travelers must obtain appropriate authorizations before beginning travel; however, ASU does not have appropriate procedures in place to ensure that it enforces this policy.

- ***Failure to Purchase from an Approved Supplier*** ³⁸

We identified two instances in which ASU employees did not make purchases from University-approved suppliers through Purchasing and Business Services, as required by ASU policy. Specifically:

- In February 2014, ASU charged NSF Award No. [REDACTED] for \$2,107 in expenses incurred to purchase aprons for industry members, faculty, and students to use during a teambuilding activity that revolved around cooking. We questioned the cost of these aprons in Finding 6; however, we also noted that the vendor from which ASU purchased the aprons was not listed as a University-approved vendor.
- In November 2014, ASU charged NSF Award No. [REDACTED] for \$12,364 in expenses incurred to purchase materials for a sensor network, consistent with the objectives of the award. However, the vendor from which the team purchased the materials, Ocean Innovations, was not listed as a University-approved supplier.

- ***Failure to Document Constructive Airfare Costs*** ³⁹

We identified two instances in which ASU allowed travelers to combine personal travel with business-related travel but did not properly obtain or document the constructive airfare cost associated with the business portion of the trip to verify that the personal travel expenses did not increase the costs charged to NSF awards. Specifically:

- In [REDACTED], the PI of NSF Award No. [REDACTED] traveled to [REDACTED], [REDACTED] to present grant-related papers at an international symposium. Rather than traveling directly to and from the symposium, the PI spent one week in [REDACTED] before the conference and two weeks in [REDACTED] after the conference as personal travel. The PI's travel reimbursement claim only included the estimated cost of traveling directly to and from [REDACTED]; however, the estimate used the dates of the PI's personal travel, rather than using the actual symposium dates to reflect the cost of the business-purpose travel. Accordingly, ASU did not appropriately verify that the additional personal travel days would not or did not increase the airfare costs incurred.

³⁸ ASU Purchasing Policy 502-01: Purchasing Responsibility and Authority for Selection states that Purchasing and Business Services personnel are responsible for contracting the best sources of supply for the University and that suppliers must be included in the ASU purchasing database before ASU can contract with them.

³⁹ ASU Travel Policy Standard 12: Personal Component of Official ASU Travel states that ASU will reimburse travelers for only those expenses that the traveler would have incurred had no personal travel component existed and that travelers should maintain documentation to support that the personal travel component did not add any incremental costs.

- o In [REDACTED], a graduate student performing work on NSF Award No. [REDACTED] traveled from Phoenix, Arizona to [REDACTED] to attend a grant-related conference. Rather than traveling back to Phoenix directly after the conference, the student spent two extra days in [REDACTED] as personal travel. ASU did not appropriately verify that flying home two days after the conference ended would not or did not increase the airfare costs incurred.

ASU does not have sufficient policies or procedures in place to ensure that it consistently complies with its internal policies and procedures. We are therefore noting 18 instances of non-compliance with ASU policies, as follows:

Table 9. Non-Compliance with ASU Policies

NSF Award No.	Compliance Issue Identified
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Submit Travel Expense Report On Time
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Obtain Prior Authorization for Travel
[REDACTED]	Failure to Purchase from an Approved Supplier
[REDACTED]	Failure to Purchase from an Approved Supplier
[REDACTED]	Failure to Document Constructive Airfare Costs
[REDACTED]	Failure to Document Constructive Airfare Costs

Source: Auditor summary of identified instances of non-compliance.

Recommendation

We recommend that NSF’s Director of the Division of Institution and Award Support:

1. Direct ASU to strengthen the administrative and management procedures in place surrounding travel and purchasing for sponsored awards. Procedures could include:
 - a. Requiring periodic training for PIs and other personnel responsible for booking travel on sponsored awards.

- b. Implementing a control that would prevent personnel from submitting expense reports outside the 30-day allowable period without justification and specific approval.
- c. Requiring personnel to provide justification regarding why they were unable to obtain prior authorization from appropriate personnel before charging sponsored projects for expenses that were not authorized in advance.
- d. Implementing a control that would prevent ASU from charging sponsored awards for purchases that do not pass through Purchasing and Business Services.
- e. Requiring award participants to provide constructive airfare for all travel requests that include personal travel and reviewing the constructive airfare to ensure that ASU only charges sponsored projects for costs associated with the business purpose of the award.

Arizona State University Response: ASU accepted this finding. ASU stated that while it offers training sessions and extensive materials to PIs, Department Research Advancement Administrators, and Central Grant and Contract Officers related to fiscal compliance and best practices for sponsored projects, it would examine its current processes and work to strengthen the administrative and management procedures in place surrounding travel and purchasing for sponsored awards.

Auditors' Additional Comments: Our position regarding this finding does not change.

COTTON & COMPANY LLP



Michael W. Gillespie, CPA, CFE
Partner

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING

NATIONAL SCIENCE FOUNDATION
ORDER # D16PB00550
PERFORMANCE AUDIT OF COSTS CLAIMED ON NSF AWARDS
ARIZONA STATE UNIVERSITY

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Questioned Costs		Total
		Unsupported	Unallowable	
1	NSF Approval Not Obtained Before Transferring Significant Portions of Award Research to Other Organizations	\$0	\$890,982	\$890,982
2	Expenses Not Appropriately Allocated to NSF Awards	0	129,095	129,095
3	Inappropriate Allocation of Indirect Costs	0	56,720	56,720
4	Unsupported Expenses	41,553	0	41,553
5	Inappropriate Subaward Payment	0	32,582	32,582
6	Unallowable Expenses	0	22,418	22,418
7	Unreasonable Travel Expenses	0	5,138	5,138
8	Inappropriate Application of Proposed Indirect Cost Rates	0	0	0
9	Non-Compliance with ASU Policies	0	0	0
Total		<u>\$41,553</u>	<u>\$1,136,935</u>	<u>\$1,178,488</u>

APPENDIX B: ARIZONA STATE UNIVERSITY RESPONSE

March 28, 2019

Michael W. Gillespie, CPA, CFE
Cotton & Company LLP
635 Slaters Lane
4th Floor
Alexandria, VA 22314

RE: Arizona State University (ASU) Performance Audit of Incurred Costs for National Science Foundation Awards for the Period January 1, 2014 to December 31, 2016

Dear Mr. Gillespie:

On February 28, 2019, Arizona State University (ASU) received the audit report, "Performance Audit of Incurred Costs for National Science Foundation Awards for the Period January 1, 2014 to December 31, 2016", as drafted by Cotton & Company LLP on behalf of the National Science Foundation (NSF) Office of Inspector General. We have reviewed the draft report and our formal response with comments addressing each audit finding follows.

Finding 1: NSF Approval Was Not Obtained to Transfer Significant Parts of Research Under an Award to Other Organizations

ASU transferred a significant part of the research, and a substantive amount of the effort, awarded under NSF Award No. [REDACTED] to other organizations without receiving the NSF authorization required by the NSF *Proposal and Award Policies and Procedures Guide* (PAPPG). Specifically, ASU did not request to contract or transfer a significant amount of the research or effort to other organizations through the original grant proposal, or through subsequent requests submitted to NSF via the NSF FastLane System; however, ASU awarded \$956,369, or 41 percent of the \$2,324,821 approved budget for the award, to two organizations to allow senior personnel identified in the original grant budget to continue performing grant related research after they left ASU, as follows:

- ASU awarded \$628,961, or 27 percent of the award budget, to the Georgia Tech Research Corporation (GTRC) to allow the PI to continue to conduct and coordinate research performed on this award, as the project's PI, from GTRC. GTRC invoiced ASU for \$605,502 during the subaward's POP, which was 7.67 years, or 96 percent, of the award's 8-year POP.

- ASU awarded \$327,408, or 14 percent of the award budget, to the University of Georgia (UG) to allow a co-PI identified in the original NSF award budget to continue performing research on this award, as a co-PI from UG. UG invoiced ASU for \$326,619 during the subaward's POP, which was 5.1 years, or 62.5 percent, of the award's POP.

As both of these subawards resulted in a transfer of a significant portion of the research, effort, and funding awarded to ASU for NSF Award No. [REDACTED], ASU should have requested NSF authorization before issuing the subawards.

Arizona State University response: ASU does not concur with this finding nor the auditor's recommendation to repay the questioned costs of \$931,811. We assert that the funding was expended as proposed for the benefit of the project and that the research was coordinated and conducted by the key personnel named in the original proposal. While the administrative step to request approval from the NSF Grants and Agreements Officer for issuance of subawards to Georgia Tech Research Corporation and to the University of Georgia via the NSF FastLane System did not occur, we had the concurrence of the assigned NSF Program Director, [REDACTED] to issue these subawards under NSF Award No. [REDACTED] after multiple conference calls as evidenced by internal email correspondence.

Arizona State University was unequivocally acting with the understanding that we had the full support and approval of NSF for issuance of these two subawards. Furthermore, Grant [REDACTED] Amendment No. 001 issued August 10, 2010 for \$40,829 was entirely for subcontract support of grant activities at the Georgia Institute of Technology (i.e. Georgia Tech Research Corporation). Likewise, Grant [REDACTED] Amendment No. 002 issued July 25, 2011 for \$30,000 included \$26,250 for further support of subcontract grant activities at Georgia Institute of Technology (i.e. Georgia Tech Research Corporation). This connotes sponsor knowledge and approval.

Based on the fact that there were no changes in the proposed scope of work nor in the key personnel conducting the work, we believe it is appropriate to characterize this as a compliance finding with no questioned costs.

As a corrective measure, we will review our subaward issuance process and verify that controls are in place to ensure appropriate Federal approvals for subaward issuance are obtained before invoices submitted by subawardees are approved for payment.

ASU offers training sessions and extensive materials to PIs, Department Research Advancement Administrators and Central Grant & Contract Officers related to sponsored project fiscal compliance and best practices. We will also ensure that guidance documents and training materials clearly state the requirement for NSF Grants and Agreements Officer approval via the NSF FastLane System in advance of entering into subaward agreements.

Finding 2: Expenses Not Appropriately Allocated to NSF Awards

ASU did not allocate expenses to NSF awards based on the relative benefits received by the awards, as required by 2 CFR 220, Appendix A, Section C.4 and 2 CFR §200.405. Specifically, ASU inappropriately allocated \$129,095 in expenses to 17 NSF awards, as follows:

- ***Student Stipend/Tuition Expenses***

ASU did not allocate stipend/tuition expenses to NSF awards based on the relative benefits received by the award charged.

- ***Other Expenses***

ASU did not allocate other expenses to NSF awards based on the relative benefits received by the awards charged.

- ***Materials and Equipment***

When purchasing materials and equipment at the end of an award's POP, ASU did not allocate the expenses to NSF awards based on the relative benefits received by the awards charged.

ASU does not have proper controls in place to ensure that it always allocates costs to sponsored projects based on the relative benefits received by the awards. As a result, ASU charged NSF awards for expenses that were not reasonable, appropriate, or allocable to the awards charged. We are therefore questioning \$129,095 of inappropriately allocated expenses.

Arizona State University response: ASU accepts this finding and will repay any questioned costs not already refunded to NSF. ASU offers training sessions and extensive materials to PIs, Department Research Advancement Administrators and Central Grant & Contract Officers related to sponsored project fiscal compliance and best practices. We will examine current processes and work to strengthen the administrative and management controls and processes over allocating expenses to sponsored funding sources and over purchasing equipment and materials/supplies at the end of a project's POP.

Finding 3: Inappropriate Allocation of Indirect Costs

ASU inappropriately allocated \$56,720 of indirect costs to nine NSF awards, as follows:

- ***Indirect Costs Inappropriately Applied to Equipment Expenses***

ASU inappropriately accounted for equipment purchases as materials and supplies expenses; as a result, it inappropriately charged indirect costs to five NSF awards.

- ***Indirect Costs Inappropriately Applied to Participant Support Costs***

ASU did not appropriately identify and account for participant support costs (PSCs). As a result, it inappropriately charged indirect costs to two NSF awards.

- ***Indirect Costs Mistakenly Charged to NSF Awards***

ASU inappropriately charged indirect costs to two NSF awards due to errors or mistakes.

Arizona State University response:

- NSF Award No. [REDACTED] – ASU does not concur with this finding of indirect costs inappropriately applied to participant support costs nor with the auditor’s recommendation to repay the questioned costs of \$1,039. The direct costs of the working dinner on which F&A of \$1,039 was assessed were not participant support costs, nor were they expended from an award account with funding budgeted for PSCs. Funds awarded for participant support costs (PSCs) in relation to this grant were segregated in a separate account in the financial system for which no indirect cost charges were budgeted or assessed. The attendees at the [REDACTED] workshop did not qualify as participants as defined by NSF. Indirect costs were not inappropriately charged to these allowable expenses.

- NSF Award No. [REDACTED] – ASU does not concur with this finding of indirect costs inappropriately applied to participant support costs nor with the auditor’s recommendation to repay the questioned costs of \$7,924. The direct costs of lodging on which F&A of \$7,924 was assessed were not participant support costs, nor were they expended from an award account with funding budgeted for PSCs. Funds awarded for participant support costs (PSCs) in relation to this grant were segregated in a separate account in the financial system for which no indirect cost charges were budgeted or assessed. The attendees at the CNS-ASU event did not qualify as participants as defined by NSF. Indirect costs were not inappropriately charged to these allowable expenses.

- ASU accepts the finding of questioned costs for inappropriate allocation of indirect costs totaling \$47,757 for the remaining enumerated award transactions and will repay any of these questioned costs not already refunded to NSF. We will examine current processes and work to strengthen the administrative and management controls and processes over applying indirect costs to Federal awards.

Finding 4: Unsupported Expenses

ASU was unable to adequately support \$41,553 of sampled expenses charged to NSF awards during the audit period, as follows:

- ***Insufficient Documentation to Support Costs***

- In February 2014, after NSF Award No. [REDACTED] had expired, ASU charged

the award for \$15,848 that ASU claimed it had incurred to support grant and scholarship expenses. However, this amount did not represent actual costs incurred; instead, ASU calculated the amount based on the total funding left on the award after the award expired on January 31, 2014. Because ASU was unable to provide any support for the costs charged, we concluded that the full amount of this expense is unsupported.

- o In August 2016, the final month of NSF Award No. [REDACTED]'s 6-year POP, ASU charged the award for \$15,250 incurred to sponsor a grant-related conference. ASU was unable to provide any receipts to support this charge; it only provided a cost transfer form indicating that it had transferred the funds from its Center for Nanotechnology to its College of Law. Because ASU was unable to provide documentation of the actual costs incurred or an agreement that supported how ASU intended to use the funding, we concluded that the full amount of this expense is unsupported.

- ***Credits Not Properly Reimbursed to NSF Awards***

ASU does not have sufficient policies and procedures in place to ensure that (a) it appropriately applies credits received to the funding source(s) to which it charged the original expenses, and (b) it retained sufficient documentation to support the allowability of costs charged to Federal awards. As a result, ASU charged NSF awards for expenses that it was unable to adequately support as allowable under the awards. We are therefore questioning \$41,553 of unsupported expenses.

Arizona State University response:

- NSF Award No. [REDACTED] – ASU does not concur with the finding of unsupported scholarship expense due to insufficient documentation to support costs nor with the auditor's recommendation to repay the questioned costs of \$15,848. This amount does represent actual costs incurred for grant and scholarship expenses. Students were selected to receive an S-STEM program scholarship in accordance with the grant requirements and the scholarship amounts were disbursed to the scholarship recipients from the University-level donor-selected financial aid account by the ASU Financial Aid office. The journal entry selected for audit represents a charge in arrears to NSF Award No. [REDACTED] for a portion of these scholarship costs. The supporting documentation underlying the journal, listing recipients and amounts, was provided.
- NSF Award No. [REDACTED] – ASU does not concur with the finding of \$15,250 unsupported conference expense characterized as an inability to provide receipts for the actual costs incurred nor with the auditor's recommendation to repay the entire \$15,250 of questioned costs. The costs incurred for the grant-related conference were supported by detailed receipts which were provided. The expense was recorded on the award account via a journal entry to reimburse the ASU College of Law for conference expenses incurred on behalf of the ASU Center for Nanotechnology. The detailed receipts provided by the College of Law for conference facilities charges, supply charges, poster printing charges, and speaker airfare reimbursements totaled \$9,996.39. After the assessment of F&A charges at 52.5%, the total cost incurred by the College of Law on behalf of the conference was \$15,244.50.

Consequently, the balance of questioned costs for which ASU was not able to provide documentation is \$5.50. ASU will repay NSF for this unsupported portion of the conference charge of \$5.50.

- ASU accepts the finding of questioned costs for unsupported expenses for the remaining enumerated award costs totaling \$10,455 and will repay any of these questioned costs not already refunded to NSF. We will examine current processes and work to strengthen the administrative and management controls, procedures and processes over allocating and charging expenses to sponsored projects.

Finding 5: Inappropriate Subaward Payment

ASU inappropriately charged a subaward payment to an NSF award. Specifically, in August 2016, ASU charged NSF Award No. [REDACTED] for \$32,582 to pay a June 2016 invoice from the National Autonomous University of Mexico (UNAM) that included a list of expenses that UNAM anticipated incurring during the period from August 2016 through January 2017. The budget for the NSF award included funding to support this subaward; however, the subaward contract noted that, aside from the initial advance payment of \$38,000, all payments on this subaward were to be made on a milestone basis and were to be in support of actual costs incurred. Because UNAM did not base its invoice on actual costs in accordance with the milestone schedule outlined in the contract, and because ASU did not receive support for how the advance payment was actually spent, ASU should not have paid the invoice or charged the expense to NSF.

ASU does not have sufficient policies and procedures in place to ensure that it appropriately reimburses subaward expenses in accordance with the terms and conditions of the subaward nor to ensure it receives support for actual expenditures that support the use of advance payments provided to subawardees. We are therefore questioning \$32,582 of inappropriate subaward payments.

Arizona State University response: ASU does not concur with this finding nor the auditor's recommendation to repay the questioned costs of \$32,582. In the subaward terms and conditions, the specification of a cost reimbursable subaward in term 1 describes the contract type, not the mechanism of payment; meaning that at the conclusion of the period of performance any unspent funds advanced according to the milestones-deliverables schedule would have to be returned to ASU.

The mechanism of payment and determination of payment amount are specified in term 2. Payments throughout the award period were to be made on a milestone-basis in accordance with the terms of the subaward (as described in subaward Attachment 5). The milestones-deliverables schedule included in Attachment 5 required "account statements" (i.e. invoices) at specified intervals to report resources received, actual expenditures and projected expenditures. While the wording of the milestones-deliverables schedule could be improved; based on the target dates and associated verbiage in this schedule, the intention clearly was to make all interim payments based on a projection of expenses, i.e., in advance. The invoices submitted by the subawardee and paid by ASU comply with this schedule.

ASU did receive support for how the advance payment was actually spent. The actual expenditure of the \$32,582 in funds advanced per the June 2016 invoice was reported in the invoice dated December 6, 2016 as required by the subaward contract terms. This invoice requested the advance payment for the period from January-May 2017 in addition to reporting the actual expenditures for the period for which funds were advanced in the \$32,582 June 2016 invoice.

The Principal Investigator noted that the subawardee, UNAM, in contrast with most institutions in the United States, cannot approve project expenditures until the funds are physically at UNAM. Their system is set up such that no researcher can incur expenses until an advance of funds has been received. They, in turn, submit invoices with expenditures to date and expected expenditures beyond the funds already advanced. This was clearly understood by both parties to the subaward and reflected in the subaward contract as described.

Hence, it is our assertion that the invoices and payments were as anticipated and described in the subaward agreement, were appropriate for ASU to pay and charge to NSF, and represent allowable costs.

Finding 6: Unallowable Expenses

ASU charged \$22,418 of unallowable expenses to eight NSF awards, as follows:

- *Unallowable Pre-Award Expenses*
- *Unallowable Entertainment-Related Expenses*
- *Unallowable Travel Expenses*
- *Unallowable Salary Expenses*

ASU does not have sufficient policies and procedures in place to ensure that it only charges allowable costs to NSF awards. As a result, ASU inappropriately charged unallowable pre-award, entertainment, travel, and salary expenses to NSF awards. We are therefore questioning \$22,418 of expenses.

Arizona State University response: ASU accepts this finding and will repay any questioned costs not already refunded to NSF. ASU offers training sessions and extensive materials to PIs, Department Research Advancement Administrators and Central Grant & Contract Officers related to sponsored project fiscal compliance and best practices. We will examine current processes and work to strengthen the administrative and management procedures over allocating pre-award expenses, entertainment-related expenses, travel expenses and salary expenses to sponsored projects.

Finding 7: Unreasonable Travel Expenses

ASU charged unreasonable travel expenses to an NSF award.

ASU does not have sufficient policies and procedures in place to ensure that personnel traveling for both business and personal purposes only charge sponsors for costs related to the business purpose of the trip. As a result, ASU charged unreasonable travel expenses to an NSF award. We are therefore questioning \$5,138 of unreasonable travel expenses.

Arizona State University response: ASU accepts this finding and will repay any questioned costs not already refunded to NSF. ASU offers training sessions and extensive materials to PIs, Department Research Advancement Administrators and Central Grant & Contract Officers related to sponsored project fiscal compliance and best practices. We will examine current processes and work to strengthen the administrative and management procedures over allocating travel expenses to sponsored projects.

Finding 8: Inappropriate Application of Proposed Indirect Cost Rates

ASU applied inappropriate indirect cost rates to direct expenses accumulated on 17 NSF awards. For each of these awards, ASU applied the Negotiated Indirect Cost Rate Agreement (NICRA) rate that was in effect at the time that ASU submitted its proposal for the award, rather than the NICRA rate that was applicable as of the effective date of the NSF award. As a result, ASU applied an indirect cost rate that was lower than was the approved NICRA rate.

ASU did not have sufficient policies and procedures in place to ensure that it calculated indirect costs using the NICRA rates that applied during the period in which the NSF awards became effective, rather than the rates that applied when ASU submitted its grant proposal or received the grant award.

Arizona State University response: ASU acknowledges that in the cited instances we applied an indirect cost rate that was lower than the NICRA rate that was applicable as of the effective date of the NSF award. However, we assert that while we are authorized to apply the NICRA rate applicable as of the effective date of an NSF award, it is allowable to apply a rate lower than the approved NICRA rate and this may occur as an intentional act rather than as the result of an oversight. We will examine current processes and confirm the strength of administrative and management controls and processes over establishing indirect cost rates for Federal awards to ensure that we apply costs at a rate no greater than the rates in effect when the sponsoring organization awards the grant.

Finding 9: Non-Compliance with ASU Policies

ASU did not comply with its own internal policies and procedures when incurring costs for NSF awards, as follows:

- *Failure to Submit Travel Expense Reports on Time*
- *Failure to Obtain Prior Authorization for Travel*
- *Failure to Purchase from an Approved Supplier*
- *Failure to Document Constructive Airfare Costs*

ASU does not have sufficient policies or procedures in place to ensure that it consistently complies with its internal policies and procedures. We are therefore noting 18 instances of non-compliance with ASU policies.

Arizona State University response: ASU accepts this finding. ASU offers training sessions and extensive materials to PIs, Department Research Advancement Administrators and Central Grant & Contract Officers related to sponsored project fiscal compliance and best practices. We will examine current processes and work to strengthen the administrative and management procedures in place surrounding travel and purchasing for sponsored awards.

If you have any questions or need additional information, please contact Michele Wrapp at 480-965-4771 or via email at Michele.Wrapp@asu.edu.

Sincerely,



Heather C. Clark
Executive Director, OKED Operations

Cc: Tamara Deuser, Associate Vice President and Chief Operating Officer, Office of Knowledge Enterprise Development
Michele Wrapp, Associate Director, OKED Operations

APPENDIX C: OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES, SCOPE, AND METHODOLOGY

The NSF OIG Office of Audits engaged Cotton & Company LLP (referred to as “we” in this report) to conduct a performance audit of costs that ASU incurred on NSF awards for the period from January 1, 2014, to December 31, 2016. The objective of the audit was to determine if costs claimed by ASU during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable Federal financial assistance requirements.

Our work required us to rely on computer-processed data obtained from ASU and NSF OIG. NSF OIG provided award data that ASU reported through ACM\$ during our audit period. ASU provided detailed transaction-level data to support all costs charged to NSF awards during the period. This resulted in a total audit universe of \$159,382,602 in costs claimed on 813 NSF awards.

We assessed the reliability of the data provided by ASU by (1) comparing costs charged to NSF award accounts within ASU’s accounting records to reported net expenditures, as reflected in ASU’s ACM\$ drawdown requests submitted to NSF for the corresponding periods; and (2) reviewing the parameters that ASU used to extract transaction data from its accounting records and systems.

Based on our assessment, we found ASU’s computer-processed data to be sufficiently reliable for the purposes of this audit. We did not review or test whether the data contained in, or the controls over, NSF’s databases were accurate or reliable; however, the independent auditor’s report on NSF’s financial statements for FY 2017 found no reportable instances in which NSF’s financial management systems did not substantially comply with applicable requirements.

ASU management is responsible for establishing and maintaining effective internal controls to help ensure that it uses Federal award funds in compliance with laws, regulations, and award terms. In planning and performing our audit, we considered ASU’s internal control solely for the purpose of understanding the policies and procedures relevant to the financial reporting and administration of NSF awards, to evaluate ASU’s compliance with laws, regulations, and award terms applicable to the items selected for testing, but not for the purpose of expressing an opinion on the effectiveness of ASU’s internal control over award financial reporting and administration. Accordingly, we do not express an opinion on the effectiveness of ASU’s internal control over its award financial reporting and administration.

After confirming the accuracy of the data provided, but before performing our analysis, we reviewed all available accounting and administrative policies and procedures, relevant documented management initiatives, previously issued external audit reports, and desk review reports to ensure that we understood the data and that we had identified any possible weaknesses within ASU’s system that warranted focus during our testing.

We began our analytics process by reviewing the transaction-level data that ASU provided and using IDEA software to combine it with the NSF OIG-provided data. We conducted data mining and data analytics on the entire universe of data provided and compiled a list of transactions that represented anomalies, outliers, and aberrant transactions. We reviewed the results of each of our

data tests and judgmentally selected transactions for testing based on criteria including, but not limited to, large dollar amounts, possible duplications, indications of unusual trends in spending, descriptions indicating potentially unallowable costs, cost transfers, expenditures outside of an award's period of performance, and unbudgeted expenditures.

We identified 250 transactions for testing and requested that ASU provide documentation to support each transaction. We reviewed this supporting documentation to determine if we had obtained sufficient, appropriate evidence to support the allowability of the sampled expenditures. When necessary, we requested and reviewed additional supporting documentation and obtained explanations and justifications from PIs and other knowledgeable ASU personnel until we had sufficient support to assess the allowability, allocability, and reasonableness of each transaction.

We discussed the results of our initial fieldwork and our recommendations for expanded testing with NSF OIG personnel. Based on the results of this discussion, we used IDEA software to select an additional judgmental sample of 50 transactions. We requested and received supporting documentation for the additional transactions and summarized the results in our final fieldwork summary.

At the conclusion of our fieldwork, we provided a summary of our results to NSF OIG personnel for review. We also provided the summary of results to ASU personnel to ensure that they were aware of each of our findings and that no additional documentation was available to support the questioned costs.

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.



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