

# Performance Audit of Incurred Costs – Duke University

REPORT PREPARED BY COTTON & COMPANY LLP

NATIONAL SCIENCE FOUNDATION  
OFFICE OF INSPECTOR GENERAL

August 31, 2020  
OIG 20-1-008





## AT A GLANCE

Performance Audit of Incurred Costs – Duke University  
Report No. OIG 20-1-008  
August 31, 2020

### 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 Duke University (Duke) for the period October 1, 2015, to September 30, 2018. The auditors tested more than \$4.9 million of approximately \$117.8 million of costs claimed to NSF. The objective of the audit was to determine if costs claimed by Duke 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 Duke's compliance with certain Federal regulations, NSF award terms and conditions, and Duke policies when allocating expenses to NSF awards. The auditors questioned \$708,906 of direct and indirect costs claimed by Duke during the audit period. Specifically, the auditors found \$270,408 of unallowable expenses, \$246,635 of inadequately supported expenses, \$77,923 of inappropriately established supplemental salary, \$29,892 of funding inappropriately drawn down as a result of expiring appropriations, \$28,719 of inappropriately allocated expenses, \$23,406 of inappropriately procured goods and services, \$12,526 of insufficiently reviewed payments to the Organization for Tropical Studies, \$10,000 of expenses that did not comply with NSF award terms and conditions, and \$9,397 of inappropriately applied indirect costs. The auditors also identified two compliance-related findings for which there were no questioned costs; incorrect application of the provisional indirect cost rate and non-compliance with Duke policies. 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 11 findings in the report with associated recommendations for NSF to ensure Duke credits or repays the questioned costs and to ensure Duke strengthens administrative and management controls.

### AUDITEE RESPONSE

Duke disagreed with the majority of the findings throughout the report but did agree with some of the questioned costs. Duke's response is attached in its entirety to the report as Appendix B.

FOR FURTHER INFORMATION, CONTACT US AT [OIGPUBLICAFFAIRS@NSF.GOV](mailto:OIGPUBLICAFFAIRS@NSF.GOV)



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

**MEMORANDUM**

**DATE:** August 31, 2020

**TO:** Dale Bell  
Director  
Division of Institution and Award Support

Jamie French  
Director  
Division of Grants and Agreements  
[REDACTED]

**FROM:** Mark Bell  
Assistant Inspector General  
Office of Audits

**SUBJECT:** Audit Report No. 20-1-008, Duke University

This memo transmits the Cotton & Company LLP (C&C) report for the audit of costs charged by Duke University (Duke) to its sponsored agreements with the National Science Foundation (NSF) during the period October 1, 2015, to September 30, 2018. The audit encompassed more than \$4.9 million of the approximately \$117.8 million of costs claimed to NSF during the period. The objective of the audit was to determine if costs claimed by Duke 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 Billy McCain at 703.292.7100 or [OIGpublicaffairs@nsf.gov](mailto:OIGpublicaffairs@nsf.gov).

Attachment

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**DUKE UNIVERSITY**

**PERFORMANCE AUDIT OF INCURRED COSTS FOR  
NATIONAL SCIENCE FOUNDATION AWARDS FOR THE PERIOD  
OCTOBER 1, 2015, THROUGH SEPTEMBER 30, 2018**

**NATIONAL SCIENCE FOUNDATION  
OFFICE OF INSPECTOR GENERAL**

## TABLE OF CONTENTS

<b>I. BACKGROUND .....</b>	<b>1</b>
<b>II. AUDIT RESULTS .....</b>	<b>2</b>
FINDING 1: UNALLOWABLE EXPENSES .....	3
FINDING 2: INADEQUATELY SUPPORTED EXPENSES.....	15
FINDING 3: INAPPROPRIATELY ESTABLISHED SUPPLEMENTAL SALARY APPOINTMENTS.....	21
FINDING 4: INAPPROPRIATE DRAWDOWN OF EXPIRING APPROPRIATIONS .....	24
FINDING 5: EXPENSES NOT APPROPRIATELY ALLOCATED TO NSF AWARDS .....	26
FINDING 6: GOODS AND SERVICES NOT APPROPRIATELY PROCURED .....	30
FINDING 7: INSUFFICIENT REVIEW OF PAYMENTS TO THE ORGANIZATION FOR TROPICAL STUDIES.....	33
FINDING 8: NON-COMPLIANCE WITH NSF AWARD TERMS AND CONDITIONS .....	36
FINDING 9: INDIRECT COSTS NOT APPROPRIATELY APPLIED.....	39
FINDING 10: INDIRECT COSTS INAPPROPRIATELY APPLIED AT THE PROVISIONAL RATE .....	40
FINDING 11: NON-COMPLIANCE WITH DUKE POLICIES .....	43
<b>APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING.....</b>	<b>56</b>
<b>APPENDIX B: DUKE UNIVERSITY RESPONSE .....</b>	<b>58</b>
<b>APPENDIX C: OBJECTIVES, SCOPE, AND METHODOLOGY.....</b>	<b>70</b>

**NATIONAL SCIENCE FOUNDATION**  
**ORDER # 140D0418F0504**  
**PERFORMANCE AUDIT OF INCURRED COSTS**  
**DUKE UNIVERSITY**

**I. BACKGROUND**

The National Science Foundation 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 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.

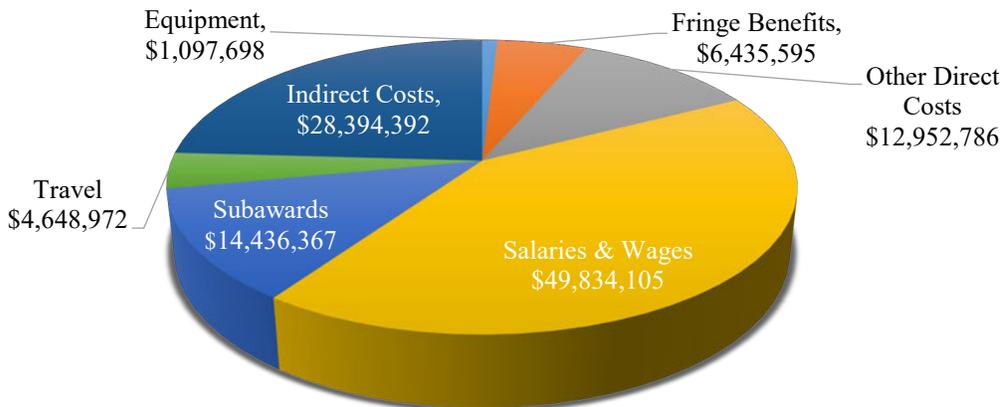
NSF OIG engaged Cotton & Company LLP (referred to as "we") to conduct a performance audit of costs incurred by Duke University (Duke). Duke is a private research university that reported \$743 million in sponsored research funding from Federal sources in fiscal year 2019. During our audit period of performance (POP) of October 1, 2015, to September 30, 2018, Duke claimed more than \$119 million on 526 NSF awards through NSF's Award Cash Management Service (ACM\$). In response to our audit, Duke provided general ledger (GL) detail to support \$117.8 million in expenses charged to 518 of these awards.<sup>1</sup> Because Duke was able to justify the discrepancies identified,<sup>2</sup> we used the GL data supporting the \$117.8 million in expenses as our data analytics population, as illustrated in Figure 1.

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<sup>1</sup> NSF ACM\$ records supported that Duke had reported or returned cash on 526 NSF awards; however, the cash returned on 9 of these awards did not tie directly to the credits processed in Duke's GL. Because we were able to verify that Duke returned the appropriate amount of funding for each of these nine awards (with the exception of NSF Award No. [REDACTED] as discussed in Finding 5), we removed all costs related to these awards from our data analytics population.

<sup>2</sup> The majority of this discrepancy was caused by Duke's September 2018 ACM\$ draw including indirect costs that had not yet posted to Duke's GL and timing differences that resulted from Duke holding two NSF Graduate Research Fellowship Program awards during the audit period.

**Figure 1. Costs Incurred by Duke by NSF Budget Category, October 1, 2015, through September 30, 2018**



Source: Auditor analysis of accounting data provided by Duke.

This performance audit, conducted under Order No. 140D0418F0504, 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*, issued by the U.S. Government Accountability Office. We communicated the results of our audit and the related findings and recommendations to Duke and NSF OIG. We included Duke's response to this report in its entirety in Appendix B.

## II. AUDIT RESULTS

We tested 275 transactions, which represented \$4,917,504<sup>3</sup> in costs that Duke claimed during the audit period, and performed additional non-transaction-based testing of administrative and supplemental salary expenses, as outlined in the OSM section of the report. Based on the results of our testing, we determined that Duke needs improved oversight of the allocation and documentation of expenses charged to NSF awards to ensure that it is able to support that costs claimed are reasonable, allocable, and allowable in accordance with all Federal regulations, award terms and conditions, and NSF and Duke policies.

As a result, we identified and questioned \$708,906 of direct and indirect costs that Duke inappropriately claimed during the audit period:

- \$270,408 of unallowable expenses.
- \$246,635 of inadequately supported expenses.
- \$77,923 of inappropriately established supplemental salary.
- \$29,892 of funding inappropriately drawn down as a result of expiring appropriations.
- \$28,719 of inappropriately allocated expenses.
- \$23,406 of inappropriately procured goods and services.

<sup>3</sup> The \$4,917,504 represents the total of the 275 transactions selected for transaction-based testing and does not represent the dollar base of the total costs reviewed during the audit.

- \$12,526 of insufficiently reviewed payments to the Organization for Tropical Studies.
- \$10,000 of expenses that did not comply with NSF award terms and conditions.
- \$9,397 of inappropriately applied indirect costs.

We also identified two compliance-related findings for which we did not question any costs:

- Incorrect application of the provisional indirect cost rate.
- Non-compliance with Duke policies.

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

### **Finding 1: Unallowable Expenses**

Duke charged 16 NSF awards a total of \$270,408 in expenses that were unallowable under Federal regulations, NSF Proposal and Award Policies and Procedure Guides (PAPPGs), and/or Duke's internal policies and procedures, as follows:

#### ***Unallowable Administrative Salary Expenses***

Duke charged one NSF award for \$94,817 in project coordinator salary costs without receiving the NSF approval required for administrative or clerical salary expenses to be allowable as direct costs under Federal and NSF policies.<sup>4</sup> Specifically:

- Between August 2017 and December 2018, Duke charged NSF Award No. [REDACTED] for \$94,817 in salary expenses incurred to support a project coordinator who, in addition to executing programmatic duties, performed activities that were administrative in nature and that would therefore typically be performed by administrative personnel within the department, such as making travel and logistical arrangements for the Principal Investigator (PI) and program participants, organizing grant meetings, and keeping financial records. Because Duke was unable to allocate the project coordinator's time between their programmatic and administrative duties and did not receive approval from NSF to use grant funds to support administrative salaries, these costs should have been treated as indirect costs, consistent with other administrative personnel.<sup>5</sup>

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<sup>4</sup> NSF PAPPG 13-1, Part II, Chapter V, Section B.1.a.(ii)(b) states that administrative or clerical services must be clearly described in the budget justification to be allowable as direct costs. Further, 2 Code of Federal Regulations (CFR) 220, Appendix A, Section F.6.b(2) states that directly charging administrative or clerical services to a grant may be appropriate where a major project or activity explicitly budgets for these services, but that these services should normally be treated as facilities and administrative costs.

<sup>5</sup> NSF PAPPG 13-1, Part II, Chapter V, Section B.1.a.(ii)(b) states that, in most circumstances, particularly for institutions of higher education, salaries of administrative or clerical staff are included as part of indirect costs. Further, 2 CFR 220, Section F.6.a.(2)(b) states that salaries of secretarial and clerical staff, administrative officers, and assistants, as well as costs related to items such as travel and office supplies, incurred within academic departments are allowable as indirect costs, provided they are treated consistently in like circumstances.

### *Unallowable Airfare Expenses*

Duke charged six NSF awards a total of \$43,955 in airfare expenses that were unallowable under Federal, NSF, and/or Duke policies, including expenses related to upgraded airfare that was not appropriately justified<sup>6</sup> and airfare that did not comply with the *Fly America Act*.<sup>7</sup> Specifically:

- In May 2016, Duke charged NSF Award No. [REDACTED] for \$2,293 in travel costs incurred for airfare that did not comply with the *Fly America Act*. Further, the traveler departed and returned from a location chosen to coincide with personal travel and Duke did not maintain documentation to support that the personal travel did not increase the total cost of the airfare charged to the award.
  - *Duke agreed to reimburse NSF for these expenses.*
- In July 2016, Duke charged NSF Award No. [REDACTED] for \$2,463 in travel costs that a traveler incurred to purchase business-class airfare as part of a trip to perform award-related activities. Duke provided a travel comparison to demonstrate that the cost of the business-class airfare did not exceed the cost of a comparable economy-class ticket; however, the dates that Duke used in the travel comparison did not correspond to the actual travel dates.<sup>8</sup> As a result, we determined that Duke was unable to support the allowability of the \$2,463 in travel costs.
  - *Duke agreed to reimburse NSF for these expenses.*
- In August 2016, Duke charged NSF Award No. [REDACTED] for \$6,775 in costs that a traveler incurred to purchase unjustified business-class airfare.
  - *Duke agreed to reimburse NSF for these expenses.*
- In August 2016, Duke charged NSF Award No. [REDACTED] for \$4,853 in costs that a traveler incurred to purchase unjustified premium economy airfare.

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<sup>6</sup> According to 2 CFR 220, Appendix A, Section J.53.c.(1) and 2 CFR §200.474 (d)(1), travelers must use economy-class travel unless they provide a justification to support that their need(s) met applicable criteria that would allow them to incur airfare costs in excess of the standard commercial airfare. In addition, NSF PAPPGs 11-1, 14-1, 15-1, and 17-1, Part I, Chapter II, Section C.2.g.(iv)a state that allowances for air travel normally will not exceed the cost of round-trip economy airfare. Further, although Duke's *Travel and Reimbursements – Foreign Air Travel* policy allows economy or business fare rates for international travel, it also states that travelers are expected to secure the lowest reasonable airfare offered, that upgrades at Duke's expense are not permitted, and that first-class air accommodations are not authorized.

<sup>7</sup> NSF PAPPG 15-1, Part II, Chapter VI, Section F.1.b.(i-ii) states that, in accordance with the *Fly America Act* (49 U.S. Code 40118), any air transportation to, from, between, or within a country other than the U.S. of persons or property, the expense of which will be assisted by NSF funding, must be performed by or under a code-sharing arrangement with a U.S.-flag air carrier. Further, the *Related Links & Information* section of Duke's *Travel and Reimbursements* policy states that travelers must use a U.S. flag carrier when traveling internationally on federally sponsored projects and provides a link that references Federal guidance on the *Fly America Act*.

<sup>8</sup> This individual traveled from New York to [REDACTED] and returned on [REDACTED] however, the travel comparison used information for a flight that departed on [REDACTED] and returned on [REDACTED]

- *Duke agreed to reimburse NSF for these expenses.*
- In September 2016, Duke erroneously charged NSF Award No. [REDACTED] for \$1,871 in travel costs for airfare to enable a doctoral student to participate in a project that did not benefit this award.
  - *Duke agreed to reimburse NSF for these expenses.*
- Between December 2017 and September 2018, Duke charged NSF Award No. [REDACTED] for \$25,700 in upgraded airfare costs for travel related to this award. Although Duke stated that the upgrades were allowable based on the PI's medical needs, because it did not justify and document this determination on a case-by case basis, the upgraded airfare costs are unallowable.<sup>9</sup> Specifically:
  - In December 2017, Duke charged the award for \$13,923 in costs incurred to purchase business-class airfare. In addition to these costs being unallowable, because the PI did not report the international travel activities or the related presentation in the annual report [REDACTED] submitted for this award, these costs do not appear to be allocable to this award. (See Finding 5 for further details.)
  - In July 2018, Duke charged the award for \$7,417, which represented a portion of the costs that the PI incurred to purchase a business-class airline ticket. Although Duke stated that the amount charged to the award represented the cost of a comparable economy-class ticket, it did not maintain a travel comparison to support that the \$7,417 represented the allowable cost of economy-class airfare.
  - In July 2018, Duke charged the award for \$2,021 in costs incurred to purchase business-class airfare.
  - In September 2018, Duke charged the award for \$2,339 in costs incurred to purchase comfort-class airfare. In addition to these costs being unallowable, one leg of this trip related to personal travel, and Duke did not provide documentation to support that it performed a travel comparison to ensure the personal travel did not increase the total cost of the airfare charged to the award.

***Unallowable Expenses Related to the [REDACTED]***

Duke charged NSF Award No. [REDACTED] \$43,505 in expenses incurred to sponsor a new collaboratively managed research center, the [REDACTED]. However, the purpose of NSF Award No. [REDACTED] was to support Duke's [REDACTED] a collaboration between Duke and [REDACTED] other [REDACTED] universities. Duke stated that it had established [REDACTED] as [REDACTED] successor in the annual progress reports that it submitted to NSF in October 2014; however, we noted that NSF rejected

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<sup>9</sup> Although 2 CFR §200.474 (d)(1) allows travelers to use first-class or business-class airfare if economy-class accommodations are not reasonably adequate for their medical needs, it states that the non-Federal entity must justify and document these conditions on a case-by-case basis for the upgraded airfare costs to be allowable.

Duke's May 2015 no-cost extension request for approval to use the funding remaining on the [REDACTED] award to support [REDACTED] expenses. In particular, NSF stated that it would not be able to consider Duke's request for a no cost extension "because the work proposed is beyond the scope of the original Agreement." As a result, these costs, which Duke incurred after NSF rejected the no-cost extension, are not allowable on the [REDACTED] award.<sup>10</sup> Specifically:

- From October to December 2015, Duke charged the [REDACTED] award for \$18,833 in travel costs, including \$9,605 for airfare costs incurred to enable an individual to meet with non-NSF award collaborators and \$1,251 in unallowable participant support costs (PSCs) related to hosting an August 2015 meeting for a project sponsored by [REDACTED], including travel expenses for Duke employees and an unreasonable limo expense.
- In November 2015, Duke charged the [REDACTED] award for a \$12,336 contract that [REDACTED] awarded to [REDACTED] University to plan and execute the [REDACTED] conference.
- In November 2015, Duke charged the [REDACTED] award for a \$12,336 contract that [REDACTED] awarded to [REDACTED] University to create [REDACTED] website to serve as a central educational resource for the field of [REDACTED]

#### *Unallowable Entertainment Expenses*

Duke charged two NSF awards a total of \$27,751 in entertainment expenses that were expressly unallowable under Federal and NSF policies.<sup>11</sup> Specifically:

- In March 2017, Duke charged NSF Award No. [REDACTED] for \$5,034 in refreshment costs incurred to host an evening reception during a grant-related conference.
  - *Duke agreed to reimburse NSF for these expenses.*
- In March 2017, Duke charged NSF Award No. [REDACTED] for \$25,717 in alcohol and other refreshment costs incurred to host an evening reception during a grant-related conference. Although Duke removed the \$3,000 in alcohol costs in response to a previous audit,<sup>12</sup> it did not appropriately reimburse NSF for the remaining \$22,717 in unallowable reception expenses.
  - *Duke agreed to reimburse NSF for these expenses.*

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<sup>10</sup> NSF PAPPG 14-1, Part II, Chapter II, Section B.1. states that neither the phenomena under study (the scope) nor the objectives of the project stated in the proposal or agreed modifications thereto should be changed without prior NSF approval.

<sup>11</sup> According to 2 CFR 220, Appendix A, Section J.17 and 2 CFR §200.438, costs of entertainment, including amusement, diversion, and social activities and any associated costs, are unallowable. Further, NSF PAPPG 13-1, Part II, Chapter V, Section C.5.i and PAPPG 17-1, Part I, Chapter II, Section C.2.g.(xiii)(a) state that costs of entertainment, amusement, diversion and social activities and any costs directly associated with such costs (such as tickets to shows or sporting events, meals, lodging, rentals, transportation, and gratuities) are unallowable.

<sup>12</sup> Duke removed the \$3,000 in alcohol costs from the award when the auditor identified the unallowable costs during the audit of Duke's consolidated financial statements as of June 30, 2017 and 2016.

### ***Unallowable Use of Participant Support Costs***

Duke inappropriately re-budgeted \$22,931 in funding provided for PSCs for one NSF award to support non-PSC expenses, which is unallowable under NSF policies without NSF Program Officer (PO) approval.<sup>13</sup> Specifically:

- In March 2017, Duke used \$22,931 of PSC funding awarded under NSF Award No. [REDACTED] to cover costs incurred to provide lodging to Duke employees<sup>14</sup> without first requesting or receiving an NSF PO's approval to re-budget the PSC funding.
  - *Duke agreed to reimburse NSF for these expenses.*

### ***Unallowable Visiting Scholar Payments***

Duke charged one NSF award for \$19,680 in visiting scholar living stipend and salary costs that were not allowable under Federal regulations, which require costs to be reasonable to be allowable.<sup>15</sup> Specifically:

- Between January 2015 and January 2016, Duke charged NSF Award No. [REDACTED] for \$49,362 in costs associated with living stipend and salary payments made to a visiting scholar, including \$19,680 in unallowable costs, as follows:
  - In October 2015, Duke performed a \$15,813 earnings adjustment to reclassify living expenses it had paid the visiting scholar from [REDACTED] as payroll expenses. However, when processing the adjustment, Duke's system erroneously charged the award for an additional \$15,813 in payroll expenses, rather than reclassifying or removing the living stipends originally charged to the award.
    - *Duke agreed to reimburse NSF for these expenses.*
  - In October 2015, Duke charged the award for \$3,867 of unallowable salary, fringe, and indirect costs because it erroneously charged the award for \$10,077 in salary, fringe, and indirect costs when it should only have charged \$6,210, based on the scholar's appointment letter.<sup>16</sup>
    - *Duke agreed to reimburse NSF for these expenses.*

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<sup>13</sup> NSF PAPPG 17-1, Part II, Chapter X, Section A.3.b. states that written prior approval from the cognizant NSF PO is required for reallocation of funds provided for PSCs.

<sup>14</sup> According to 2 CFR §200.75, PSCs refer to direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with conferences or training projects.

<sup>15</sup> According to 2 CFR 220, Appendix A, Section C., a cost must be reasonable to be allowable, and a cost is reasonable if, in its nature and amount, it does not exceed that which a prudent person would incur under the circumstances prevailing at the time the decision was made to incur the cost.

<sup>16</sup> According to 2 CFR 220, Appendix A, Section J.10.a., compensation charges to sponsored agreements may include reasonable amounts for activities that contribute to the sponsored project.

### *Unallowable Travel Expenses*

Duke charged six NSF awards a total of \$11,788 in unallowable travel expenses, including costs incurred for travel that did not have a business purpose<sup>17</sup> or that did not reasonably benefit the award charged.<sup>18</sup> Specifically:

- In November 2015, Duke charged NSF Award No. [REDACTED] for \$942 in cancellation fees related to the rental of four-wheel drive vehicles that did not benefit the award.
  - *Duke agreed to reimburse NSF for these expenses.*
- In April 2016, Duke charged NSF Award No. [REDACTED] for \$5,190 in travel expenses after a student submitted an expense report to support that [REDACTED] spent the full amount of [REDACTED] \$5,190 travel advance on grant-related travel. Although Duke determined that the costs were allowable because the traveler relocated to a remote location for more than 12 months to perform grant-related research, \$2,616 of the costs claimed within the expense report related to unallowable personal items, such as furniture, housewares, clothing, electronics, and cleaning services. Further, the student did not always support these purchases with receipts.
  - *Duke agreed to reimburse NSF for these expenses.*
- In July 2016, Duke charged NSF Award No. [REDACTED] for \$488 in travel expenses that did not have a business purpose, including \$363 for lodging and Meal & Incidental Expense (M&IE) per diem incurred when a traveler arrived at a conference location two days before the conference began,<sup>19</sup> as well as \$125 for an unallowable visa fee.<sup>20</sup>
  - *Duke agreed to reimburse NSF for these expenses.*
- In August 2016, Duke charged NSF Award No. [REDACTED] for \$280 in travel costs that did not have a business purpose, including \$224 for lodging and \$56 for a taxi fare that the PI incurred for personal travel after the grant-related conference ended.
  - *Duke agreed to reimburse NSF for these expenses.*
- In December 2016, Duke charged NSF Award No. [REDACTED] for \$5,417 in travel expenses that did not benefit the award charged, as the costs related to a trip that was scheduled to occur 6 months after the award expired.

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<sup>17</sup> According to 2 CFR 220, Appendix A, Section J.53.a and 2 CFR §200.474(a), allowable travel costs include expenses incurred by employees who are in travel status on official business.

<sup>18</sup> According to 2 CFR 220, Appendix A, Section C.2. and 2 CFR §200.403(a), to be allowable, costs must be allocable and reasonable for the performance of the Federal award.

<sup>19</sup> We are questioning all lodging and per diem claimed on [REDACTED] as Duke did not provide a business purpose for the traveler having arrived two days before the conference's start date (i.e., [REDACTED]).

<sup>20</sup> NSF PAPPG 11-1, Part II, Chapter VI, Section G.4 states that NSF assumes no responsibility for securing passports or visas required by any person as a result of their participation in an NSF-supported project.

- *Duke agreed to reimburse NSF for these expenses.*
- In July 2018, Duke charged NSF Award No. [REDACTED] for \$935 in travel expenses that did not have a business purpose, including \$111 for in-flight Wi-Fi and \$824 for lodging per diem claimed after the conference ended.<sup>21</sup>
  - *Duke agreed to reimburse NSF for these expenses.*
- In July 2018, Duke charged NSF Award No. [REDACTED] \$1,110 in unallowable travel costs because the PI claimed M&IE and lodging per diem rates at \$144 and \$301, respectively, when the allowable U.S. Department of State (DOS) per diem rates for the travel location were \$105 for M&IE and \$194 for lodging.<sup>22</sup>
  - *Duke agreed to reimburse NSF for these expenses.*

### ***Other Unallowable Costs***

Duke charged three NSF awards for \$5,981 in other costs that were not allowable under Federal or NSF policies, which state that for costs to be allowable, they must be necessary and reasonable for the performance of, and conform to any limitations of, the Federal award.<sup>23</sup> Specifically:

- In September 2016, Duke charged NSF Award No. [REDACTED] for \$1,231 in unallowable summer Research Experience for Undergraduate (REU) program costs, including:
  - \$894 in expenses billed to the award twice.
  - \$337 in costs related to general-purpose supplies, including notebooks, pencils, batteries, and clothing, that were not necessary to achieve the objectives of the award.<sup>24</sup>
    - *Duke agreed to reimburse NSF for these expenses.*
- In March 2017, Duke charged NSF Award No. [REDACTED] for \$1,700 in stipend payments related to a grant-sponsored conference that the conference host, [REDACTED], erroneously invoiced to Duke twice.
  - *Duke agreed to reimburse NSF for these expenses.*

<sup>21</sup> We are questioning all lodging claimed on [REDACTED] as Duke did not provide a business purpose for the traveler having remained [REDACTED] for 3 days after the conference end date (i.e., [REDACTED]).

<sup>22</sup> According to Duke's Foreign Travel Meal and Foreign Lodging Policy, travelers on foreign travel may claim per diem based on DOS's published rate for the travel location.

<sup>23</sup> According to 2 CFR §200.403, to be allowable, a cost must be necessary and reasonable for the performance of the Federal award and must conform to any limitations or exclusions set forth in the Federal award as to types or amount of cost items.

<sup>24</sup> According to 2 CFR §200.453, costs incurred for materials, supplies, and fabricated parts are only allowable if they are necessary to carry out a Federal award.

- In May 2018, Duke charged NSF Award No. [REDACTED] for \$3,050 in costs incurred to purchase materials and supplies more than 90 days before the award period became effective, without first obtaining NSF approval.<sup>25</sup>

- *Duke agreed to reimburse NSF for these expenses.*

Duke did not have sufficient policies or procedures in place to ensure that it only charged allowable expenses to NSF awards. Specifically, Duke's policies and procedures did not always ensure that it:

- Consistently accounted for salary earned by employees responsible for performing administrative activities.
- Maintained documentation to support that airfare charged to Federal awards complied with Federal, sponsor, and Duke policies and procedures.
- Accurately performed travel comparisons to identify the allowable cost of economy-class tickets when allowing travelers to purchase upgraded airfare for foreign travel.
- Spent funds remaining on expiring awards in accordance with the approved scope of the awards.
- Appropriately segregated reception expenses from other conference costs to ensure that it did not charge unallowable entertainment costs to Federal awards.
- Did not use PSC funding to support non-participant expenses, including expenses incurred to support Duke employees.
- Appropriately accounted for living stipends and salary payments made to visiting scholars.
- Identified and removed duplicate expenses from Federal awards.
- Verified travel expenses charged to sponsored projects for trips that were scheduled to occur within the award's POP.
- Accurately identified additional costs incurred by travelers for non-business purposes before charging unallowable costs to NSF awards.
- Prevented personnel from charging unallowable pre-award costs to Federal awards.

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<sup>25</sup> Per 2 CFR §200.308.(d)(1), pre-award expenses incurred more than 90 calendar days before an award's effective date require prior approval from the awarding agency. Further, NSF PAPPG 18-1, Part II, Chapter X: Section 2.b. only allows pre-award spending within the 90-day period immediately preceding the start date of the grant and states that requests for pre-award costs for periods exceeding 90 days from the start date of the grant must be submitted to NSF.

We are therefore questioning \$270,408 of unallowable expenses charged to 16 NSF awards. Duke concurred with \$106,386 of the questioned costs but disagreed with \$164,022, as illustrated in Table 1.

**Table 1. Unallowable Expenses**

Description	NSF Award No.	Fiscal Year	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
August 2017 – December 2018 Administrative Salary		2018 - 2019	\$60,393	\$34,424	\$94,817	\$0
May 2016 Airfare		2016	1,442	851	2,293	2,293
July 2016 Airfare		2017	2,463	0	2,463	2,463
August 2016 Airfare		2017	4,343	2,432	6,775	6,775
August 2016 Airfare		2017	3,852	1,001	4,853	4,853
September 2016 Airfare		2017	1,485	386	1,871	1,871
December 2017 Airfare		2018	8,757	5,166	13,923	0
July 2018 Airfare		2019	4,665	2,752	7,417	0
July 2018 Airfare		2019	1,271	750	2,021	0
September 2018 Airfare		2019	1,471	868	2,339	0
Out of Scope ██████████ Expenses		2016	38,033	5,472	43,505	0
March 2017 Entertainment Expense		2017	5,034	0	5,034	5,034
March 2017 Entertainment Expense		2017	22,717	0	22,717	22,717
March 2017 PSC		2017	22,931	0	22,931	22,931
October 2015 Visiting Scholar Payments		2016	12,535	7,145	19,680	19,680
November 2015 Travel		2016	600	342	942	942
April 2016 Travel		2016	2,076	540	2,616	2,616
July 2016 Travel		2017	488	0	488	488
August 2016 Travel		2017	179	101	280	280
December 2016 Travel		2017	3,450	1,967	5,417	5,417
July 2018 Travel		2019	588	347	935	935
July 2018 Travel		2019	698	412	1,110	1,110
September 2016 Conferences Expense		2017	1,231	0	1,231	1,231
March 2017 Duplicate PSC		2017	1,700	0	1,700	1,700
May 2018 Pre-Award Expense		2018	1,906	1,144	3,050	3,050
		<b>Total</b>	<b>\$204,308</b>	<b>\$66,100</b>	<b>\$270,408</b>	<b>\$106,386</b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$164,022 in questioned administrative salary and airfare expenses for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.

2. Direct Duke to provide documentation to support that it has repaid or otherwise credited the \$106,386 of questioned airfare, entertainment, participant support costs, visiting scholar, travel, conference, duplicate, and pre-award expenses for which it has agreed to reimburse NSF.
3. Direct Duke to strengthen its policies and procedures related to charging project coordinator time directly to NSF awards. Updated procedures should require the award's Principal Investigator to verify that the sponsor appropriately approved any project coordinator salaries charged directly to an NSF award, or that the effort the coordinator spent on administrative activities is appropriately segregated from time spent on programmatic activities.
4. Direct Duke to strengthen its policies and procedures related to purchasing airfare that will be charged to a Federal project. Updated procedures could include:
  - a. Requiring travelers to document the business purpose of each day of a planned trip before purchasing airfare to enable Duke to evaluate whether it must perform a travel comparison to support that airfare costs did not increase as a result of personal travel.
  - b. Requiring travelers to maintain documentation to support compliance with the Fly America Act and, if a deviation is required, maintain documentation that supports the costs relate to an allowable Fly America Act exception.
  - c. Requiring travelers to justify and document any conditions that resulted in an allowable need to purchase upgraded airfare, as required by Federal regulations.
  - d. Updating its foreign travel policies to provide specific guidance regarding the allowability of business-class airfare on federally sponsored awards, including how the traveler should document the cost of comparable economy-class airfare.
5. Direct Duke to strengthen its controls surrounding spending on NSF awards for which the sponsor has denied no-cost extension requests.
6. Direct Duke to strengthen its conference hosting policies and procedures to ensure that it does not charge Federal awards for unallowable entertainment expenses, including those incurred to host evening receptions that are not necessary to achieve award objectives.
7. Direct Duke to strengthen its administrative and management processes and procedures related to the use of, and the re-budgeting of, participant support cost funding. Updated processes could include:
  - a. Performing periodic reviews of all costs accumulated within accounts Duke established to track participant support costs to ensure that Duke used the funds to support participants, rather than Duke employees.

- b. Providing additional training on accounting for participant support costs. Training topics should include what type(s) of expense are allowable and when/how to request NSF approval to re-budget participant support costs.
8. Direct Duke to strengthen its policies and procedures related to providing salary and stipend payments to visiting scholars. Updated policies should ensure that visiting scholars do not receive payments that exceed their agreed-upon appointment amounts.
9. Direct Duke to perform periodic reviews of costs accumulated within its general ledger to identify and remove any duplicate expenses charged against Federal awards.
10. Direct Duke to strengthen its policies and procedures related to approving travel expense reports. Updated procedures could include:
  - a. Updating its travel policies to include explicit guidance regarding whether Duke will reimburse travelers for per diem claimed on date(s) before a conference begins and/or after a conference ends.
  - b. Implementing a control to validate the claimed per diem rates against those outlined on the Department of State website.
  - c. Requiring travelers combining personal and business travel to submit documentation to support that combining the itineraries did not increase the cost of the trip.
11. Direct Duke to establish additional controls to help ensure that it appropriately creates and retains all documentation necessary to support the allowability of expenses charged to sponsored programs.
12. Direct Duke to implement a control to flag any charges against an NSF award when the purchaser incurs the expense more than 90 days before the effective date of an award.

**Duke University Response:** Duke disagreed with our conclusions regarding the allowability of \$164,135 in costs questioned on four NSF awards. Specifically:

- With regard to the \$94,817 in questioned administrative salary expenses charged to NSF Award No. [REDACTED] Duke believes the administrative costs are allowable because the original budget, which NSF approved, included direct salary costs for administrative activities. Specifically, Duke stated that, although the original budget had indicated that undergraduate student research assistants would perform the administrative activities, rather than the project coordinator, because the activities that the project coordinator performed mirrored those activities specified in the original approved budget, these costs should be allowable.
- With regard to the \$25,700 in questioned upgraded airfare expenses charged to NSF Award No. [REDACTED] Duke believes the costs are allowable because the traveler has

suffered from a medical condition that requires [REDACTED] to travel in first class [REDACTED]. Specifically, Duke stated that it provided a note from the traveler's physician to support the traveler's condition, and that it disagreed with the audit team's conclusion that Federal regulations require it to provide justifications for first-class travel on a trip-by-trip basis.

- With regard to the \$113 in questioned costs related to first-class train tickets charged to NSF Award No. [REDACTED] Duke believes the costs are allowable because the NSF guidance in effect at the time of the trip, NSF PAPPG Chapter VI.F.1.a(ii), states, "A train, bus or other surface carrier may be used in lieu of, or as a supplement to, air travel at the lowest first-class rate by the transportation facility used."
- With regard to the \$43,505 in questioned [REDACTED] expenses charged to NSF Award No. [REDACTED] Duke believes the costs are allowable because NSF accepted the October 2014 annual report for this project, which included a significant amount of detail regarding the PI's intention to support [REDACTED] successor, [REDACTED]. Duke further stated that the transition activities did not represent a change in scope or project objectives, and that NSF's May 2015 denial of a second no-cost extension was based on an NSF policy restricting no-cost extensions for cooperative agreements and has no bearing on the allowability of the transition activities.

**Auditor's Additional Comments:** We removed the \$113 in questioned costs related to first-class train tickets from this finding, as detailed below. Our position regarding the rest of this finding has not changed. Specifically:

- With regard to the \$94,817 in questioned administrative salary expenses charged to NSF Award No. [REDACTED] because the undergraduate student portion of the budget did not specifically include salary funding for the students to perform the administrative activities questioned in our finding, such as making travel arrangements and keeping financial records,<sup>26</sup> our position regarding this finding has not changed.
- With regard to the \$25,700 in unallowable upgraded airfare expenses charged to NSF Award No. [REDACTED] because the physician's note that [REDACTED] provided was dated [REDACTED] after the travel occurred and after we selected the airfare expenses as part of our sample testing, the note does not support that Duke appropriately justified and documented the traveler's condition at the time it approved the upgraded flight costs. Because Duke did not consider, justify, or document the traveler's established medical condition on a case-by-case basis before allowing the traveler to purchase the upgraded airfare, our position regarding this finding has not changed.
- With regard to the \$113 in questioned costs related to first-class train tickets charged to NSF Award No. [REDACTED] because the language that Duke cited was included in NSF

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<sup>26</sup> The budget justification for undergraduate students only stated, "Funds are requested to support three students per year. Students will serve as research assistants to the fellows. Students will be expected to attend the [REDACTED] conference at Duke. They will also make entries into the [REDACTED] database used to track and monitor progression of the fellows for five years."

PAPPG 14-1 (i.e., the PAPPG applicable to the last funding increment applicable to this award),<sup>27</sup> we removed these costs from the finding.

- With regard to the \$43,505 in questioned [REDACTED] expenses charged to NSF Award No. [REDACTED] because NSF's acceptance of an annual report does not represent approval to incur costs related to work outside the scope of the original agreement, our position regarding this finding has not changed. Further, in response to Duke's claim that NSF denied the second no-cost extension based solely on authority limitations, we noted that the NSF Program Director stated that the work Duke proposed under the second amendment was outside the scope of the original award. Specifically, the e-mail that Duke received from the NSF Program Director on July 15, 2015, with the subject line "NO: Second No-Cost Extension" stated, "NSF's authority does not permit second No-Cost-Extensions for Cooperative Agreements. Additionally, we have determined that we would not be able to consider your request as an exception because the work proposed is beyond the scope of the original Agreement."

## **Finding 2: Inadequately Supported Expenses**

Duke did not provide adequate documentation to support the allocability, allowability, and reasonableness of \$246,635 in expenses charged to nine NSF awards during the audit period, as required under Federal regulations<sup>28</sup> and NSF PAPPGs,<sup>29</sup> as follows:

### ***Inadequately Supported Office of Information Technology Costs***

Duke did not provide sufficient documentation to support the allowability of \$228,141 in services billed by the Duke Office of Information Technology (OIT). Specifically:

- From September 2015 to December 2016, Duke charged NSF Award No. [REDACTED] for \$228,141 in computer services provided by OIT, an internal specialized service center. Although these services did appear to benefit the award charged, OIT inappropriately charged the award based on unsupported, generalized salary amounts and the estimated effort percentages outlined in the original grant budget, rather than using either the actual

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<sup>27</sup> The last incremental funding supplement for NSF Award No. [REDACTED] awarded through Amendment 4, was dated July 8, 2014.

<sup>28</sup> According to 2 CFR §215.21(b), recipients' financial management systems shall provide cost accounting records that are supported by source documentation. Further, 2 CFR §200.403(g) states that costs must be adequately documented to be allowable.

<sup>29</sup> NSF PAPPG 14-1, Part II, Chapter V, Section A states that the grantee organization is responsible for ensuring that all costs charged to NSF awards meet the requirements of the applicable cost principles, general grant terms and conditions, and any other specific requirements of both the award notice and the applicable program solicitation. Further, PAPPGs 15-1 and 16-1, Part II, Chapter V, Section A and 17-1 and 18-1, Part II, Chapter X, Section A state that grantees should ensure that all costs charged to NSF awards meet the requirements of the cost principles contained in 2 CFR §200, Subpart E, grant terms and conditions, and any other specific requirements of both the award notice and the applicable program solicitation.

employee salaries and level of effort<sup>30</sup> or formally established internal service provider (ISP) rates.<sup>31</sup>

### ***Inadequately Supported Participant Support Costs***

Duke did not provide sufficient documentation to support the allowability of \$9,600 in PSCs charged to three NSF awards. Specifically:

- In August 2016, Duke charged NSF Award No. [REDACTED] for \$3,000 in expenses incurred to enable a student to participate in a grant-sponsored fellowship program. Duke provided the student's fellowship offer letter, which stated that the student was eligible to receive "up to \$3,000 towards housing and travel costs"; however, Duke did not request or maintain documentation of the student's actual housing or travel costs to support that the student was eligible for the full \$3,000.
- In March 2017, Duke charged NSF Award No. [REDACTED] for a payment made to [REDACTED] to enable students to travel to a grant-related conference. The students' participation in the [REDACTED] meeting appears to have benefited this award; however, Duke did not provide adequate documentation to support the allowability of one of the \$600 travel stipends invoiced.
  - *Duke agreed to reimburse NSF for these expenses.*
- In August 2017, Duke charged NSF Award No. [REDACTED] for a \$9,000 stipend paid to a student that participated in a summer training program. However, this stipend was not supported by the student's offer letter. Because the grant's budget only included \$3,000 for participant stipends, the additional \$6,000 paid to this student is not supported as an allowable or reasonable expense.

### ***Inadequately Supported Other Costs***

Duke did not provide sufficient documentation to support the allowability of \$7,941 in other direct costs charged to three NSF awards. Specifically:

- In August 2016, Duke charged NSF Award No. [REDACTED] for \$4,700 in cash payments that it purportedly [REDACTED] However,

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<sup>30</sup> Although 2 CFR 220, Appendix A, Section J.10.c.(1) allows grantees to charge costs to sponsored projects based on budgeted work activity using a plan confirmation system, it also states the system must reasonably reflect only the activity for which the institution compensates the employee, that the institution must update the system to reflect activity applicable to each sponsored activity, and that, at least annually, a responsible official must sign a statement confirming that the salaries and wages charged to sponsored projects are reasonable in relation to the actual work performed.

<sup>31</sup> According to 2 CFR 220, Appendix A, Section J.47.b, the costs of services provided by specialized service facilities are allowable when charged directly to awards based on actual usage of the services on the basis of a schedule of rates or an established methodology that does not discriminate against federally supported activities and is designed to recover only the aggregate costs of the services.

Duke did not maintain sufficient documentation to support how and when it distributed the cash payments to participants.

- *Duke agreed to reimburse NSF for these expenses.*
- In September 2016, Duke charged NSF Award No. [REDACTED] for \$945 that an ISP invoiced for DukeCard and student activity fees. However, Duke did not maintain documentation to support that it spent the funds on allowable costs.
  - *Duke agreed to reimburse NSF for these expenses.*
- In December 2017, Duke charged NSF Award No. [REDACTED] for \$2,296 in medical expense advances and reimbursements that it paid to individuals performing fieldwork in [REDACTED]. Duke provided receipts to support the cash payments disbursed; however, it did not provide documentation to support that it made the payments in accordance with its established Health Care Travel Cost Reimbursement Benefit plan.<sup>32</sup>
  - *Duke agreed to reimburse NSF for these expenses.*

#### ***Inadequately Supported Airfare Costs***

Duke did not provide sufficient documentation to support the allowability of \$953 in airfare costs charged to two NSF awards.<sup>33</sup> Specifically:

- In January 2016, Duke charged NSF Award No. [REDACTED] for costs incurred to enable participants to attend a grant-related workshop; however, Duke did not provide an original receipt or invoice to support a \$317 airfare expense that the travel agency billed for the purchase of an allowable economy-class ticket.
  - *Duke agreed to reimburse NSF for these expenses.*
- In May 2016, Duke charged NSF Award No. [REDACTED] for \$636 in unsupported airfare costs related to the purchase of an allowable economy-class ticket.
  - *Duke agreed to reimburse NSF for these expenses.*

Duke did not have sufficient policies or procedures in place to ensure that it always maintained documentation to support that the costs it charged to Federal awards were reasonable, allocable, and allowable under Federal regulations. Specifically, Duke's policies and procedures did not ensure that it always maintained documentation to support that:

- Costs that internal service centers billed were reasonable or allowable.

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<sup>32</sup> Duke provided health care benefits to project employees [REDACTED] based on the terms and conditions outlined in its *Health Care Travel Cost Reimbursement Benefit for Insured Employees* document, effective March 2013.

<sup>33</sup> According to 2 CFR 220, Appendix A, Section J.53.c.(1) and 2 CFR §200.474(d), airfare costs in excess of the customary standard commercial airfare (coach or equivalent) are unallowable unless appropriately justified.

- It awarded participant stipends at appropriate amounts.
- It appropriately disbursed cash payments for survey incentives.
- It only reimbursed remote field workers for allowable medical expenses.
- All airfare costs related to allowable economy-class tickets.

As a result, we were unable to verify that these costs represent allowable, allocable, and reasonable expenses. We are therefore questioning \$246,635 charged to nine NSF awards. Duke concurred with \$9,494 of the questioned costs but disagreed with \$237,141, as illustrated in Table 2.

**Table 2. Inadequately Supported Expenses**

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
September to December 2016 OIT Costs		2017	\$145,313	\$82,828	\$228,141	\$0
August 2016 Participant Travel and Stipend Costs		2017	3,000	0	3,000	0
March 2017 Participant Travel and Stipend Costs		2017	600	0	600	600
August 2017 Participant Stipend Costs		2018	6,000	0	6,000	0
August 2016 [REDACTED] Costs		2017	2,956	1,744	4,700	4,700
September 2016 Other Costs		2017	945	0	945	945
December 2017 Dependent Medical Costs		2018	2,296	0	2,296	2,296
January 2016 Airfare Costs		2016	317	0	317	317
May 2016 Airfare Costs		2016	636	0	636	636
		<b>Total</b>	<b>\$162,063</b>	<b>\$84,572</b>	<b>\$246,635</b>	<b>\$9,494</b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$237,141 in questioned Office of Information Technology, participant support, and travel expenses for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to provide documentation to support that it has repaid or otherwise credited the \$9,494 in questioned participant support, travel, and other direct costs for which it has agreed to reimburse NSF.
3. Direct Duke to strengthen its policies and procedures related to creating and retaining documentation, including introducing additional controls to help ensure that Duke appropriately creates and retains all documentation necessary to support the allowability of expenses charged to sponsored programs.

4. Direct Duke to strengthen its policies and procedures related to internal specialized service center billings. Updated processes could include:
  - a. Requiring Duke to create and retain a service agreement that includes the accompanying scope of work and rate sheets before the internal specialized service center performs any work.
  - b. Performing periodic reviews of internal specialized service center invoices to confirm that the internal service providers bill the departments appropriately, using the established rate(s).
  - c. Requiring internal specialized service centers to provide timesheets to support any direct labor expenses charged to Federal awards.
  - d. Requiring internal specialized service centers to provide detailed documentation to support their invoices, such as information regarding labor hours and materials.
5. Direct Duke to strengthen its policies and procedures related to participant support cost payments. Updated processes could include:
  - a. Updating its participant payment policies to ensure that all stipend payments are supported by an approved offer letter that identifies the amount of the stipend.
  - b. Ensuring that it verifies the total costs that students incurred to participate in a Duke-sponsored program before reimbursing the students, rather than automatically reimbursing students based on the maximum amount outlined in their offer letters.
  - c. Implementing a control to flag participant stipend expenses for additional review by the project's Principal Investigator to ensure that the expenses met the stipend requirements outlined in the award budget.
6. Direct Duke to strengthen its policies and procedures surrounding participation incentive payments. Updated procedures should require personnel to log the date and amount of all human subject payment disbursements and require periodic reconciliations of these disbursements.
7. Direct Duke to issue guidance regarding how to appropriately document the allowability of medical expense reimbursements for individuals performing fieldwork on Duke's behalf.
8. Direct Duke to strengthen its administrative and management processes and procedures surrounding the approval of travel expenses. Updated procedures could include issuing specific guidance regarding the type of documentation that Duke must retain to support the allowability of airfare expenses charged to Federal awards.

**Duke University Response:** Duke disagreed with \$237,141 in costs questioned on three NSF awards. Specifically:

- With regard to the \$228,141 in questioned OIT computer service expenses charged to NSF Award No. [REDACTED] Duke believes the costs are allowable because the services provided were necessary to achieve the objectives of the award and because the actual costs that Duke incurred exceeded the amount allocated to the NSF award. Specifically, Duke stated that it had provided documentation to support that actual OIT salaries exceeded the budgeted amounts and that OIT staff provided the budgeted levels of effort, thereby demonstrating that Duke's actual costs exceeded the amount allocable to the award.
- With regard to the \$3,000 in questioned participant and travel stipend costs charged to NSF Award No. [REDACTED], Duke believes the costs are allowable because the program solicitation, proposal, and award agreement did not include a maximum allowable amount for housing and travel allowances for participating fellows. Duke further stated that NSF does not require the grantee institution to document how fellows spend these stipends.
- With regard to the \$6,000 in questioned participant stipend costs charged to NSF Award No. [REDACTED], Duke believes the costs are allowable because NSF does not require grantee institutions to obtain approval before re-budgeting additional funding as PSCs. Specifically, Duke stated that it charged NSF Award No. [REDACTED] for \$9,000 in stipend costs during the last summer of the award, rather than the \$3,000 budgeted, because other sources of stipend support that had been available to [REDACTED] were not available to [REDACTED].

**Auditor's Additional Comments:** Our position regarding this finding has not changed. Specifically:

- With regard to the \$228,141 in questioned OIT computer service expenses charged to NSF Award No. [REDACTED] while Duke was able to provide support that OIT staff salaries exceeded the salary amounts used to calculate the amount included in the original budget, it was unable to provide evidence to support the actual hours, and/or effort these employees spent providing services that related to the scope of the NSF award, as is required for the salary costs to be allowable. Because Duke charged the expenses to the NSF award based on the award budget rather than on records that supported the actual work performed, our position regarding this finding has not changed.
- With regard to the \$3,000 in questioned participant and travel stipend costs charged to NSF Award No. [REDACTED] the student's offer letter stated that the REU program would provide "up to \$3,000 towards housing and travel costs," thereby implying that the maximum allowable amount for the housing and travel allowance was \$3,000. As Duke did not maintain documentation to support that the student used the funds toward housing and travel costs, our position regarding this finding has not changed.

- With regard to the \$6,000 in questioned participant stipend costs charged to NSF Award No. [REDACTED], because Duke did not provide any documentation to support the allowability or reasonableness of the \$9,000 stipend, noting only that it charged \$9,000 to the award rather than the \$3,000 budgeted based on a lack of alternate funding for [REDACTED] [REDACTED]<sup>34</sup> our position regarding this finding has not changed.

### **Finding 3: Inappropriately Established Supplemental Salary Appointments**

Duke did not appropriately establish supplemental salary appointments and, as a result, inappropriately charged 14 NSF awards for \$77,923 in salary expenses that it did not establish in accordance with Federal regulations, as follows:

#### *Unallowable Supplemental Salary Expenses*

Duke charged six NSF awards a total of [REDACTED] in supplemental salary expenses that it did not appropriately support<sup>35</sup> and/or did not appropriately base on the employee's institutional base salary (IBS),<sup>36</sup> as is required to be allowable under Federal regulations. Specifically:

- In October 2015, Duke charged NSF Award No. [REDACTED] for \$773 in unallowable supplemental salary, fringe, and indirect costs because it inappropriately charged the award for \$10,205 in salary, fringe, and indirect costs when it should only have charged \$9,432, based on the salary amount identified in the individual's appointment letter.
- From October 2015 to May 2016, Duke charged NSF Award No. [REDACTED] for \$11,102 in supplemental salary, fringe, and indirect costs associated with payments made to an employee that were not based on the employee's IBS, a supplemental job form, or other sufficient documentation.
- In July and August 2016, Duke charged NSF Award No. [REDACTED] for \$13,008 in supplemental salary, fringe, and indirect costs associated with payments made to a graduate student. Duke was unable to sufficiently support that these payments were based on an hourly rate, an IBS rate, or a specified level of effort.
- In September 2016 and August 2018, Duke charged NSF Award No. [REDACTED] for \$20,867 in supplemental salary, fringe, and indirect costs associated with payments made to an adjunct instructor that were not based on the instructor's zero-dollar IBS, a supplemental job form, or other sufficient documentation. Further, Duke did not identify this instructor as a participant on this award.

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<sup>34</sup> The documentation that Duke provided indicated that additional funding sources were not available to cover the costs of this student's stipend because [REDACTED] and other funding sources were only available for [REDACTED]

<sup>35</sup> According to 2 CFR 220 Appendix A, Section J.10 and 2 CFR §200.430(a)(3), costs of compensation for personal services are allowable to the extent that they are supported.

<sup>36</sup> According to 2 CFR 220 Appendix A, Section J.10 and 2 CFR §200.430(h)(ii)(2), charges for work performed on sponsored agreements are allowable at the employee's base salary rate; in no event will charges to sponsored agreements exceed the proportionate share of the base salary for that period.

- In June and July 2017, Duke charged NSF Award No. [REDACTED] for \$23,107 in supplemental salary, fringe, and indirect costs associated with payments made to an adjunct instructor that were not based on the instructor's zero-dollar IBS appointment, a supplemental job form, or other sufficient documentation.
- From August to November 2017, Duke charged NSF Award No. [REDACTED] for \$9,066 in supplemental salary, fringe, and indirect costs associated with payments made to an employee that were not based on the employee's IBS, a supplemental job form, or other sufficient documentation.

### ***Improper IBS Appointments for Former Employees***

Duke did not establish new IBS appointments for former employees that it re-hired as adjunct faculty to perform part-time work on NSF awards. Specifically:

- Between May 2016 and August 2018, Duke charged NSF Award Nos. [REDACTED] and [REDACTED] for supplemental salary, fringe, and indirect costs associated with payments made to three individuals that were not based on the individuals' zero-dollar IBS appointments established in Duke's payroll system. Specifically, rather than establishing formal appointments, Duke allowed departmental personnel to make supplemental payments to these individuals based on the individuals' IBS rates [REDACTED] without formally documenting how the department determined the payment amounts.
  - Because the supplemental payments appear to be reasonable and consistent with the employees' IBS rates [REDACTED] we are not questioning any costs associated with these exceptions.

### ***Supplemental Summer Salary Amounts Based on the NSF Award Budget***

Duke established supplemental summer salary appointments using the amounts established in the NSF award budget, rather than using the employee's actual IBS and anticipated effort. Specifically:

- Between May 2016 and July 2018, Duke charged NSF Award Nos. [REDACTED] and [REDACTED] for supplemental salary, fringe, and indirect costs associated with payments made to four employees that were based on the salary amounts identified in the NSF award budgets, rather than on the employees' established IBS appointments.
  - Because each of the employees appears to have earned less than their IBS rate, and because Duke certified the salary costs as appropriate, we are not questioning any costs associated with these exceptions.

Duke does not have sufficient policies or procedures in place to ensure that it establishes supplemental salary appointments using formal university-approved appointments. Instead, it relies on individual departments to appropriately establish and pay supplemental salary costs. We

are therefore questioning \$77,923 of unallowable supplemental salary payments and noting compliance exceptions related to salary costs charged to 14 NSF awards. Duke disagreed with all questioned costs, as illustrated in Table 3.

**Table 3. Inappropriately Established Supplemental Salary Appointments**

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
October 2015 Supplemental Salary		2016	\$486	\$287	\$773	\$0
October 2015 to May 2016 Supplemental Salary		2016	6,982	4,120	11,102	0
July and August 2016 Supplemental Salary		2017	8,181	4,827	13,008	0
September 2016 and August 2018 Supplemental Salary		2017, 2019	13,065	7,802	20,867	0
June and July 2017 Supplemental Salary		2017, 2018	14,533	8,574	23,107	0
August to November 2017 Supplemental Salary		2018	5,702	3,364	9,066	0
IBS Not Updated for Former Employees		2016 – 2019	0	0	0	0
Supplemental Summer Salary Paid Based on the NSF Grant Budget		2016 – 2019	0	0	0	0
		<b>Total</b>	<b>\$48,949</b>	<b>\$28,974</b>	<b>\$77,923</b>	<b>\$0</b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$77,923 in questioned salary expenses for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to strengthen its administrative and management processes and procedures related to establishing supplemental pay appointments. Updated processes could include requiring personnel to set supplemental pay appointments based on an established, non-zero institutional base salary rate or another appropriately established rate of pay.
3. Direct Duke to strengthen its administrative and management processes and procedures related to rehiring former employees as adjunct faculty. Updated processes could include requiring Duke to document how it established each former employee’s institutional base salary rate based on their prior appointment at the university.

**Duke University Response:** Duke disagreed with the \$77,923 in questioned costs identified for this finding. Specifically, Duke stated that it disagreed with the finding because it “specifically followed all internal controls and procedures related to hiring staff/faculty through its human resource processes” and provided “considerable documentation of the reasonableness of all payments.”

**Auditor’s Additional Comments:** Our position regarding this finding has not changed. Duke stated that the questioned costs are reasonable based on its hiring practices; however, because the finding related to Duke’s lack of documentation supporting that it had appropriately established the supplemental salary expenses based on the employees’ IBS appointments, rather than the reasonableness of the salary appointments based on Duke’s compensation standards, our position regarding this finding has not changed.

#### **Finding 4: Inappropriate Drawdown of Expiring Appropriations**

Duke inappropriately drew down \$29,892 from NSF’s ACM\$ to cover expenses it might incur after an award’s funding appropriation expired. Specifically, Duke calculated its final funding requests for two NSF awards based on the amount of funding remaining on the awards, rather than on the amount of actual or anticipated disbursements, as required by Federal regulations<sup>37</sup> and the NSF PAPPG.<sup>38</sup> Further, Duke appears to have incurred the expenses after the funding appropriations expired,<sup>39</sup> as follows:

- On September 21, 2015, 9 days before NSF Award No. [REDACTED]’s funding appropriation expired, Duke drew down \$45,875 in funding remaining on the award to cover costs that it might incur after the appropriation expired, but before the NSF award’s POP expired.<sup>40</sup> Duke’s GL supports that it incurred \$17,272 in expenses on or before the appropriation’s expiration date, and that it returned \$10 to NSF; however, Duke used the remaining \$28,593 to cover costs that it did not record in its GL until after the appropriation expired.
- On September 20, 2016, 10 days before the funding appropriation for NSF Award No. [REDACTED] expired, Duke drew down \$3,481 in funding remaining on the award to cover costs that it might incur after the appropriation expired, but before the NSF award’s POP expired.<sup>41</sup> Duke’s GL supports that it incurred \$1,281 in expenses before the

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<sup>37</sup> According to 2 CFR §215.22(b)(2) and 2 CFR §200.305(b)(1), cash advances to a recipient organization shall be limited to the minimum amounts needed and be timed to be in accordance with the actual, immediate cash requirements of the recipient organization in carrying out the purpose of the approved program or project. Further, these policies note that the timing and amount of cash advances shall be as close as is administratively feasible to the actual disbursements by the recipient organization for direct program or project costs and the proportionate share of any allowable indirect costs.

<sup>38</sup> NSF PAPPGs 11-1 and 15-1, Part II, Chapter III, Section C.2.a., state that advances to a grantee must be limited to the minimum amount needed and be timed to be in accordance with the actual, immediate cash requirements of the grantee in carrying out the purpose of the approved program or project. Further, these policies note that the timing and amount of cash advances shall be as close as is administratively feasible to actual disbursements for direct program costs and the proportionate share of any allowable indirect costs.

<sup>39</sup> According to 2 CFR § 215.25.(f) and 2 CFR § 200.308.(e) a Federal awarding agency cannot permit a transfer that would cause any Federal appropriation to be used for purposes other than those consistent with the appropriation.

<sup>40</sup> The POP for NSF Award No. [REDACTED] was February 1, 2009, through January 31, 2016.

<sup>41</sup> The POP for NSF Award No. [REDACTED] was January 1, 2011, through December 31, 2016.

appropriation expired, and that it returned \$901 of the funding to NSF; however, Duke used the remaining \$1,299 to cover costs that it did not record in its GL until after the appropriation expired.

Duke interpreted the notices that it received from NSF’s Division of Financial Management regarding expiring appropriations as approval to draw down any remaining funds on the awards, if the awards had not expired.<sup>42</sup> Because Duke interpreted NSF’s notice that it would not accept additional costs on canceling funds to mean only that NSF would not permit Duke to draw down any additional costs in ACM\$ after the appropriation expired, Duke drew down all of the funding remaining on these awards, as the awards did not expire until after the appropriation’s expiration date. Duke continued to incur costs on these awards until the awards expired, then returned any unused funds to NSF during award close-out. Duke stated that it has not used this methodology since NSF clarified the language in its expiring appropriation notifications, but asserted that the e-mails it received during the audit POP were unclear.

Although Duke appears to have incurred all of the questioned costs during the POP for the relevant NSF award(s), because it appears to have incurred the expenses after the funding appropriation for each award expired, we are questioning \$29,892 of funding drawn down on two NSF awards, as illustrated in Table 4.

**Table 4. Inappropriate Drawdown of Funding on Expiring Appropriations**

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs	
			Total	Duke Agreed to Reimburse
September 2015 ACM\$ Draw		2016	\$28,593	\$0
September 2016 ACM\$ Draw		2017	1,299	0
		<b>Total</b>	<b><u>\$29,892</u></b>	<b><u>\$0</u></b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$29,892 in questioned Award Cash Management Service drawdowns for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to strengthen its administrative and management processes and procedures surrounding the drawing-down of funding from the Award Cash Management Service system on awards with expiring appropriations. Updated processes could include:

<sup>42</sup> NSF’s Division of Financial Management sends awardees an e-mail each year identifying all NSF awards with unliquidated balances that are funded by NSF appropriations that will be canceled at the end of the fiscal year. The e-mails that Duke receives for these two awards stated that NSF would financially close and de-obligate unliquidated balances for the identified awards, and that it would not accept any future adjustments against the appropriations once the appropriations had been canceled.

- a. Validating that Duke’s Award Cash Management Service cash-draw process documents the expenses for which the individual is requesting reimbursement.
  - b. Validating that Duke’s Award Cash Management Service cash-draw process documents the total expenses incurred for each award, and that Duke does not draw down funding in excess of this amount.
3. Direct Duke to strengthen its award set-up processes and procedures to ensure it cannot charge costs to active awards if the Federal appropriations have expired.

**Duke University Response:** Duke disagreed with the \$29,892 in questioned costs identified for this finding. Specifically, Duke stated that because the “cancelling funds” notices that NSF provided in 2015 and 2016 equated the deadline for requesting payment with the deadline for incurring additional costs, “a reasonable conclusion is that NSF was requiring payment requests for all anticipated project costs to be submitted by the published deadline.” Duke stated that it followed the implied approach and returned any project funds that it did not expend on allowable project costs within the award’s POP, as defined by NSF.

**Auditor’s Additional Comments:** Our position regarding this finding has not changed. Specifically, because the NSF notices did not permit awardees to draw down funding in a manner that is unallowable per Federal guidelines, our position regarding this finding has not changed.

### **Finding 5: Expenses Not Appropriately Allocated to NSF Awards**

Duke did not always allocate expenses to NSF awards based on the relative benefits the awards received, as required by Federal regulations<sup>43</sup> and NSF PAPPGs.<sup>44</sup> Specifically, Duke inappropriately allocated a total of \$28,719 in expenses to eight NSF awards, as follows:

#### ***Inappropriately Allocated Other Direct Costs***

Duke charged four NSF awards a total of \$14,034 in inappropriately allocated other direct costs. Specifically:

- In August 2016, Duke charged NSF Award No. [REDACTED] for costs that a Duke internal service center invoiced for chemical analyses performed on [REDACTED] samples. Although the [REDACTED] analyses appear to be allocable to this award, the \$9,137 charged for [REDACTED] does not appear to be allocable, as the annual reports that the PI submitted to NSF only highlight the analysis of [REDACTED] samples. Further, the PI indicated that the [REDACTED] sample analyses were not part of this NSF project when justifying

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<sup>43</sup> According to 2 CFR 220, Appendix A, Section C.4.a. and 2 CFR §200.405(a), a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to such cost objective in accordance with relative benefits received or other equitable relationship.

<sup>44</sup> NSF PAPPGs 14-1, 15-1, and 16-1, Part II, Chapter V: Section A state that grantees should ensure that costs claimed under NSF grants are necessary, reasonable, allocable, and allowable under the applicable cost principles, NSF policy, and/or the program solicitation.

which portion of a September 2015 invoice from the same service center was allocable to this award.

- In September 2016, Duke charged NSF Award No. [REDACTED] for \$4,357 in costs incurred to purchase a 3D printer. Although the PI purchased the printer to support this award, in response to our inquiries, Duke confirmed that it did not use the printer solely to support this project. Because Duke indicated that it used the printer to support other projects approximately 25 percent of the time, \$1,089 of the costs associated with this printer are not allocable to this award.
  - *Duke agreed to reimburse NSF for these expenses.*
- In April 2017, Duke charged NSF Award No. [REDACTED] for \$4,038 in costs incurred to purchase data loggers that it used to support two NSF awards. Because these materials benefitted two projects, Duke should have allocated the costs between the two awards. Accordingly, we determined that 50 percent of the cost of the data loggers, or \$2,019, is not allocable to this award.
  - *Duke agreed to reimburse NSF for these expenses.*
- In June 2017, Duke charged NSF Award No. [REDACTED] for \$3,578 in costs incurred to publish a grant-related article. Although the publication does appear to relate to the scope of this award, because the article stated that the authors performed the research under two awards,<sup>45</sup> 50 percent of the publication expense, or \$1,789, does not appear to be allocable to this award.
  - *Duke agreed to reimburse NSF for these expenses.*

### ***Inappropriately Allocated Travel Costs***

Duke charged one NSF award for \$9,939 in inappropriately allocated travel costs. Specifically:

- In December 2017, Duke transferred \$23,862 in travel expenses from an institutional funding source to NSF Award No. [REDACTED]. Although the traveler was the PI of this NSF award, because the annual reports that the PI submitted to NSF did not mention the PI's presentation topic, the conference attended, or the international travel, and because the PI recognized support from three NSF grants in their presentation, it does not appear to have been appropriate for Duke to allocate the travel costs to this award.

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<sup>45</sup> According to 2 CFR §200.461(b)(1), professional journal publications are allowable where the publications report work sponsored by the Federal government. Further, NSF PAPPG 16-1, Part II, Chapter VI, Section E.4.a. states that, unless otherwise provided in the grant, the grantee is responsible for assuring that an acknowledgment of NSF support is made "(i) in any publication (including Web pages) of any material based on or developed under this project."

- Because \$13,923 of these travel costs relate to unallowable upgraded airfare that we questioned in Finding 1, we are only questioning \$9,939 of the travel costs in this finding.

– *Duke agreed to reimburse NSF for these expenses.*

### ***Inappropriately Allocated Purchases Near Grant Expiration***

Duke inappropriately charged two NSF awards a total of \$4,279 for materials and supplies purchased near the award's expiration date, when there was little to no time for Duke to use these items to support research under the award.<sup>46</sup> Specifically:

- In January 2018, Duke charged NSF Award No. [REDACTED] for \$1,687 in costs incurred to purchase [REDACTED] that it received two days before the award expired. Although Duke may have used other [REDACTED] to conduct grant-related research, because Duke appears to have incurred these costs to re-stock materials at the end of the award, rather than to perform grant-related research, these costs are not allocable to this award.

○ *Duke agreed to reimburse NSF for these expenses.*

- In July 2018, less than 2 months before NSF Award No. [REDACTED] expired, Duke charged the award for \$2,592 in costs incurred to purchase a laptop computer. Although Duke stated that it required the laptop because the laptops it had available did not possess sufficient main memory to process the grant-related files, because Duke purchased the laptop in the final 60 days of the award's 3-year POP and because Duke stated that it continued to use the computer for data analysis on other NSF-funded research after the award expired, it does not appear to have been reasonable for Duke to allocate 100 percent of this expense to this award.

○ *Duke agreed to reimburse NSF for these expenses.*

### ***Inappropriately Allocated Participant Support Costs***

Duke inappropriately charged an NSF award for \$467 in PSC expenses that did not benefit the award charged. Specifically:

- In October 2016, Duke charged NSF Award No. [REDACTED] for \$467 in costs incurred to purchase meals for six individuals who did not attend the related working group activity.

○ *Duke agreed to reimburse NSF for these expenses.*

Duke did not have proper controls in place to ensure that it consistently allocated costs to sponsored awards based on the relative benefits the awards received. As a result, Duke charged

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<sup>46</sup> NSF PAPPG 15-1, Part II, Chapter V, Section A.2.c. states that grantees typically should not purchase equipment or computing devices or restock materials and supplies in anticipation of grant expiration where there is little or no time left for the grantee to use such items in the actual conduct of the research.

NSF awards for expenses that it should have allocated to alternative funding sources. We are therefore questioning \$28,719 of inappropriately allocated expenses on eight NSF awards. Duke concurred with \$19,582 of the questioned costs but disagreed with \$9,137, as illustrated in Table 5.

**Table 5. Expenses Not Appropriately Allocated to NSF Awards**

Description	NSF Award No.	Fiscal Year	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
August 2016 Chemical Analysis		2017	\$5,820	\$3,317	\$9,137	\$0
September 2016 3D Printer		2017	694	395	1,089	1,089
April 2017 Data Loggers		2017	1,286	733	2,019	2,019
June 2017 Publication		2017	1,125	664	1,789	1,789
December 2017 Travel		2018	6,251	3,688	9,939	9,939
January 2018 Supplies		2018	1,061	626	1,687	1,687
July 2018 Laptop		2019	1,630	962	2,592	2,592
October 2016 Participant Dinner		2017	467	0	467	467
		<b>Total</b>	<b><u>\$18,334</u></b>	<b><u>\$10,385</u></b>	<b><u>\$28,719</u></b>	<b><u>\$19,582</u></b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$9,137 in questioned unallocable chemical analysis costs for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to provide documentation to support that it has repaid or otherwise credited the \$19,582 in questioned unallocable travel, publication, supply, and participant support expenses for which it has agreed to reimburse NSF.
3. Direct Duke to strengthen its administrative and management controls and processes related to allocating expenses to sponsored projects. Updated processes could include:
  - a. Requiring PIs or other designated staff to both document the allocation methodology used to charge expenses to sponsored projects and provide a detailed justification for using that methodology.
  - b. Requiring Duke Office of Sponsored Programs personnel to review allocation methodologies for all material, supply, and travel or other conference expenses charged to NSF awards less than 90 days before the award’s period of performance expires.

- c. Requiring the Office of Sponsored Programs to verify that all publications charged directly to NSF award(s) specifically identify the NSF award(s) charged before approving the expense.
4. Direct Duke to encourage Principal Investigators to identify all award participants and report all award-related travel in the annual reports submitted to NSF.

**Duke University Response:** Duke disagreed with our conclusion regarding the allowability of the \$9,137 in questioned chemical analyses costs charged to NSF Award No. [REDACTED]. Specifically, Duke believes these costs are allowable based on the PI's confirmation that [REDACTED] analysis of [REDACTED]

**Auditor's Additional Comments:** Our position regarding this finding has not changed. Specifically, because the PI was working on multiple sponsored projects during this period and had previously indicated that the [REDACTED] analyses were not part of the work under this NSF award, our position regarding this finding has not changed.

#### **Finding 6: Goods and Services Not Appropriately Procured**

Duke charged two NSF awards a total of \$23,406 for goods and services that it did not procure in accordance with Federal and/or Duke policies, which require that grantees complete a scope of work and term sheet when procuring consulting services costing \$2,500 or more and that, if the value of the services exceeds \$10,000, grantees competitively bid the services or support the acquisition with a sole-source justification, as follows:

- In October 2015, Duke charged NSF Award No. [REDACTED] for \$6,280 in consultant fees that were not supported by a purchase order, scope of work, or term sheet.<sup>47</sup>
- In August 2017, Duke charged NSF Award No. [REDACTED] for \$17,126 in costs that an ISP incurred to purchase object-based storage nodes without performing any competitive bidding activities or completing a sole source justification. Duke confirmed that the ISP could have purchased these storage nodes from a different vendor.<sup>48</sup>

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<sup>47</sup> Duke Policy GAP 200.370, *Purchasing Services on Sponsored Funds*, states that a completed Independent Contractor Checklist and a completed Scope of Work and Term Sheet are required to procure services costing between \$2,500 and \$10,000 and that Procurement Services will issue a purchase order to the vendor for the procured services.

<sup>48</sup> According to 2 CFR § 215.44 and 2 CFR §200.319, grantees must conduct all procurement transactions in a manner that provides for full and open competition and must make awards to the bidder whose bid is responsive to the solicitation and is most advantageous to the recipient, price, quality and other factors considered. Further, Duke Policy GAP 200.101, *Sole Source Justification/Price Quote Selection for Purchases on Sponsored Funds*, states that grant managers and PIs are required to obtain a minimum of three price or rate quotes, or to complete a Sole Source Justification/Price Quote Selection Form for all service or material procurements greater than \$10,000.

Duke did not have sufficient policies and procedures in place to ensure that it appropriately procured goods and services before charging the cost of those goods and services to sponsored programs. Specifically, Duke did not have sufficient controls in place to ensure that it:

- Created and maintained sufficient documentation to support the allowability of consulting services charged to sponsored projects.
- Verified that ISPs appropriately performed competitive bidding activities or completed sole-source justifications before contracting with vendors to purchase supplies with a value exceeding \$10,000 if the ISP anticipates charging the supplies to Federal awards.

Because Duke did not appropriately procure these goods and services, we were unable to verify that these costs were reasonable, or that they represented the best price and quality for the goods received. We are therefore questioning \$23,406 in costs related to inappropriately procured goods and services on two NSF awards. Duke disagreed with all questioned costs, as illustrated in Table 6.

**Table 6. Goods and Services Not Appropriately Procured**

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
October 2015 Consultant Costs		2016	\$4,000	\$2,280	\$6,280	\$0
August 2017 Supply Costs		2018	17,126	0	17,126	0
		<b>Total</b>	<b><u>\$21,126</u></b>	<b><u>\$2,280</u></b>	<b><u>\$23,406</u></b>	<b><u>\$0</u></b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$23,406 in questioned costs incurred for inappropriately procured supplies and services for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to strengthen its administrative and management procedures related to procuring consultant services. Updated processes could include:
  - a. Providing annual training to Principal Investigators and other departmental personnel responsible for procuring consultant services to ensure they are aware of the requirement to complete a documented scope of work for the services provided, a payment term sheet, an independent contractor checklist, and a purchase order when procuring consultant services with a value greater than or equal to \$2,500.

- b. Implementing a control to flag any service providers that have invoiced more than \$2,500 within a single fiscal year without an approved purchase order in place.
3. Direct Duke to strengthen its administrative and management procedures related to performing competitive bidding activities. Updated processes could include:
  - a. Providing annual training for those internal service provider personnel responsible for purchasing to ensure they are aware of the competitive bidding procedures that buyers must perform before procuring goods or services that may be charged to Federal awards.
  - a. Implementing a control to flag and review all vendors that have invoiced more than \$10,000 in services to a single funding source. In addition, Duke should require periodic monitoring of those invoices to ensure that its personnel have either performed and documented competitive bidding procedures or completed a sole-source justification form.

**Duke University Response:** Duke disagreed with our conclusions regarding the \$23,406 in questioned costs identified for this finding. Specifically:

- With regard to the \$6,280 in questioned consultant costs charged to NSF Award No. [REDACTED] Duke believes the costs are allowable because they did not relate to procurement actions with a cost greater than or equal to \$2,500. Specifically, Duke stated that the sampled costs related to two procurement actions of \$1,500 each that took place in separate budget periods, and that the additional \$1,000 payments to the consultants represented travel expenses. Duke further stated that these costs should be allowable because the finding referenced Duke policy, rather than Federal regulations.
- With regard to the \$17,126 in questioned supply costs charged to NSF Award No. [REDACTED], Duke believes the costs are allowable because it had previously identified the selected vendor as the most competitive source for IT components. Specifically, Duke stated that it had incurred the costs as part of a major renovation project that its construction management department was undertaking, and that it would not be reasonable to require the department to obtain new bids for every new capital project.

**Auditor's Additional Comments:** Our position regarding this finding has not changed. Specifically:

- With regard to the \$6,280 in questioned consultant costs charged to NSF Award No. [REDACTED] Duke's procurement policy does not limit the \$2,500 threshold to an annual amount within a single budget period. Further, although Duke stated that the costs should not be questioned because the criteria for the finding is a Duke policy, rather than a Federal policy, Federal regulations require awardees to incur costs in a manner consistent

with the established institutional policies and practices for a cost to be allowable.<sup>49</sup> As a result, our position regarding this finding has not changed.

- With regard to the \$17,126 in questioned ISP costs charged to NSF Award No. [REDACTED], Duke's policy requires departments to either create a sole-source justification or obtain at least three competitive bids when procuring services with a value greater than or equal to \$10,000, regardless of which department is procuring the services. As a result, our position regarding this finding has not changed.

**Finding 7: Insufficient Review of Payments to the [REDACTED] [REDACTED]**

Duke did not sufficiently review \$12,526 of costs claimed on an NSF award managed by the [REDACTED] [REDACTED]<sup>50</sup> to ensure the costs were reasonable, allocable, or allowable.<sup>51</sup> Specifically, while serving as [REDACTED] [REDACTED] from [REDACTED] Duke allowed [REDACTED] to submit proposals and bill for expenses on sponsored research awards through Duke's Office of Research Support. However, Duke did not establish sufficient controls to ensure that the costs it claimed on behalf of [REDACTED] complied with Federal, NSF, or Duke policies and procedures.<sup>53</sup>

Specifically, because [REDACTED] NSF Award No. [REDACTED] Duke allowed [REDACTED] to submit journal vouchers that Duke's Controller approved without reviewing the actual invoices or receipts.<sup>54</sup> After the Controller approved the journal vouchers, Duke would reimburse [REDACTED] for its expenses, then draw down funding from ACM\$ to reimburse itself for the funds it paid to [REDACTED]. In response to our audit inquiries, [REDACTED] provided receipts and/or rate sheets to support the allowability of most of the sampled expenses; however, we noted a number of exceptions related to the costs that [REDACTED] charged to NSF Award No. [REDACTED] during the audit period, as follows:

- \$10,144 in indirect costs inappropriately applied to PSCs.<sup>55</sup>
  - *Duke agreed to reimburse NSF for these expenses.*

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<sup>49</sup> According to 2 CFR 220, Appendix A, Section C.2, a cost must be reasonable to be allowable, and to be reasonable, awardees must consider the extent to which the actions taken with response to the incurrence of the cost are consistent with established institutional policies and practices.

<sup>50</sup> [REDACTED]

<sup>51</sup> According to 2 CFR 220, Appendix A, Section C.4.d.(1), the recipient institution is responsible for ensuring that costs charged to a sponsored agreement are allowable, allocable, and reasonable.

<sup>52</sup> [REDACTED]

<sup>53</sup> [REDACTED] to adhere to Duke's rules and regulations.

<sup>54</sup> Duke's Controller noted that [REDACTED] [REDACTED] because [REDACTED] believed that, as the [REDACTED] was [REDACTED]. Specifically, the Controller stated that [REDACTED] did not [REDACTED] because [REDACTED] would not have had a detailed enough understanding of the purpose of the award [REDACTED].

<sup>55</sup> NSF PAPPG 14-1, Chapter II, Section C.2.g.(v) states that indirect costs are not allowed on PSCs.

- \$1,984 in costs for which [REDACTED] did not provide third-party receipts to support the reasonableness and allowability of the expenses.
  - *Duke agreed to reimburse NSF for \$312 of these expenses.*
- \$360 in PSC funding that [REDACTED] had inappropriately used to support lodging expenses for the project’s coordinator, co-coordinator, and two teaching assistants who were Duke employees.<sup>56</sup>
  - *Duke agreed to reimburse NSF for these expenses.*
- \$38 in taxi costs claimed for an individual who was not included in the participant list for the sponsored program.
  - *Duke agreed to reimburse NSF for these expenses.*
- \$91,296 in station fees that Duke did not review for accuracy and reasonableness.
  - Because [REDACTED] was able to provide a station fee schedule to support [REDACTED] [REDACTED]<sup>57</sup> were consistent with the station fee rates [REDACTED], and because the rates appeared to be reasonable, we are not questioning any costs associated with this exception.

Duke [REDACTED] however, during the audit period, [REDACTED] [REDACTED] As a result, Duke did not develop sufficient controls to ensure that the expenses complied with Duke policies and procedures, as required [REDACTED] We are therefore questioning \$12,526 in costs for which Duke reimbursed [REDACTED] on one NSF award. Duke concurred with \$10,854 of the questioned costs, but disagreed with \$1,672, as illustrated in Table 7.

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<sup>56</sup> NSF PAPPG 14-1 Chapter II, Section C.2.g.(v) states that PSCs refer to costs of transportation, per diem, stipends and other related costs for participants or trainees (but not employees) in connection with NSF-sponsored conferences, meetings, symposia, training activities, and workshops.

<sup>57</sup> [REDACTED] provided a fee schedule that identified the fees it charged for all daily and overnight visitors at each of its sites, as well as screenshots from its accounting system that supported the rates it billed.

**Table 7. Insufficient Review of Payments to the [REDACTED]**

Description	NSF Award No.	Fiscal Year	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
Indirect Costs Inappropriately Applied to [REDACTED] PSCs	[REDACTED]	2016	\$0	\$10,144	\$10,144	\$10,144
Inadequately Supported [REDACTED] Expenses	[REDACTED]	2016	1,640	344	1,984	312
Unallowable Use of PSCs	[REDACTED]	2016	360	0	360	360
Inappropriately Allocated [REDACTED] Expenses	[REDACTED]	2016	30	8	38	38
Insufficiently Reviewed Station Fees	[REDACTED]	2016	0	0	0	0
		<b>Total</b>	<b>\$2,030</b>	<b>\$10,496</b>	<b>\$12,526</b>	<b>\$10,854</b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$1,672 in questioned [REDACTED] costs for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to provide documentation to support that it has repaid or otherwise credited the \$10,854 of questioned [REDACTED] expenses for which it has agreed to reimburse NSF.
3. Direct Duke to strengthen its administrative and management processes and procedures related to creating [REDACTED] Updated procedures could include:
  - a. Requiring the [REDACTED] to specifically identify the [REDACTED] use to [REDACTED]
  - b. Issuing specific guidance regarding how Duke should [REDACTED] to these organizations.

**Duke University Response:** Duke disagreed with our conclusions regarding the allowability of \$1,672 in questioned costs and that its review of [REDACTED] was insufficient. Specifically:

- With regard to the \$1,984 in questioned transportation costs, Duke disagreed that \$1,672 was unsupported as it provided a valid third-party receipt to support all but \$312 of the transportation costs.



for the GRIP program, it did not request or maintain documentation to support that the students only used the GRIP stipends to cover allowable program expenses.<sup>58</sup>

***Non-Compliance with REU Site Program Award Terms and Conditions***

Duke did not comply with the terms and conditions of REU Site program awards.<sup>59</sup> Specifically:

- Duke did not draw down or disburse award funding in accordance with the budgets established for two NSF REU awards (NSF Award Nos. [REDACTED] and [REDACTED] or with the terms outlined in the REU award letters. Specifically, Duke disbursed REU stipends in a lump sum at the beginning of each REU program, rather than periodically throughout the program as the participants earned the stipends. This policy was inconsistent with the terms outlined in the students’ award letters and could have resulted in Duke providing full stipends to participants who exited the program early and therefore would not have been eligible for the full stipend.
  - Because the participants who received the stipends appear to have completed the program, we are not questioning any costs related to this exception.

Duke did not have sufficient grant oversight measures in place to ensure that it consistently proposed and charged NSF awards in compliance with the terms and conditions established for the NSF awards. We are therefore questioning \$10,000 in costs claimed and noting compliance exceptions for costs claimed on five NSF awards. Duke disagreed with the questioned costs, as illustrated in Table 8.

**Table 8. Non-Compliance with NSF Award Terms and Conditions**

Description	NSF Award No.	Fiscal Year	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
January 2017 GRIP Stipends	[REDACTED]	2017	\$10,000	\$0	\$10,000	\$0
September 2010 – August 2017 REUs	[REDACTED]	2010 – 2017	0	0	0	0

<sup>58</sup> [REDACTED] Dear Colleague Letter: NSF [REDACTED] which NSF issued on [REDACTED] and specifically referenced within the GRIP fellowship letters, states that Fellows will receive an allowance of \$5,000 through their GRFP institution to cover costs associated with the GRIP internship project. However, the budget and budget justification section of the letter identifies restrictions on this allowance. Specifically, it states that allowable expenses include travel to the host site and agency, visa applications (if applicable), field permits, research supplies, excess luggage, travel and health insurance, per diem, and other travel-related costs. Fellow stipends, major pieces of equipment, large amounts for materials and supplies, and spouse and dependent travel are not allowed. The budget section also notes that Fellows are responsible for making their own travel arrangements and that all international travel must adhere to the Fly America Act.

<sup>59</sup> The budget for NSF Award No. [REDACTED] states, “Each student (9) will receive a stipend of \$500/week (10 weeks) for the summers of 2015- 2019 (9 X \$5,000 = \$45,000), which will be paid in 3 monthly installments (June, July and August) at the end of each month.” Further, the award letter sent to REU students states that the students would receive a \$3,500 stipend paid in three equal installments of \$1,166.67 at the end of June, the end of July, and the end of August.

Description	NSF Award No.	Fiscal Year	Questioned Costs			
			Direct	Indirect	Total	Duke Agreed to Reimburse
March 2015 – February 2020 REUs	██████████	2015 – 2020	0	0	0	0
		<b>Total</b>	<b><u>\$10,000</u></b>	<b><u>\$0</u></b>	<b><u>\$10,000</u></b>	<b><u>\$0</u></b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Resolve the \$10,000 in questioned non-compliant Graduate Research Internship Program costs for which Duke has not agreed to reimburse NSF and direct Duke to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Duke to strengthen its controls related to award set-up to ensure that personnel working on the award, either directly or indirectly, are aware of the specific NSF terms and conditions that apply to special types of NSF awards.

**Duke University Response:** Duke disagreed with the \$10,000 in questioned costs for this finding, as well as with the identified non-compliance with the award terms and conditions. Specifically:

- With regard to the \$10,000 in questioned GRIP stipends charged to NSF Award No. ██████████ Duke believes that the fellowship guidance that NSF had published as of the date of the award ██████████ defines the grantee’s responsibilities as “disburs[ing] the \$5,000 internship allowance to the Fellow” and “report[ing] the expended GRIP allowance (\$5,000) for each Fellow on the GRFP Program Expense Report.” Duke does not believe that there is a reference either in ██████████ or in the broader GRFP guidance ██████████ that requires the institution to collect and review documentation regarding how a fellow spent their stipend, which may be considered taxable income for the fellow.
- With regard to the reported non-compliance with the REU Site program award terms and conditions under NSF Award Nos. ██████████ and ██████████ Duke believes that the timing of the payments is not relevant. Duke further stated that its internal control environment ensures that it only includes allowable, allocable costs that fully benefit the REU program in the program costs.
- With regard to the reported non-compliance related to its postdoctoral salary PSCs charged to NSF Award No. ██████████ Duke maintained that the NSF program announcement for this award (i.e., ██████████) both allows salaries and fringe benefits for postdoctoral associates and directly instructs the applicant to include these costs as participant costs in Section F of the budget page.

**Auditor's Additional Response:** Our position regarding this finding has partially changed. Specifically:

- With regard to the \$10,000 in questioned GRIP stipends charged to NSF Award No. [REDACTED] the Dear Colleague Letter in [REDACTED] lists the expenses for which fellows may use the stipends. Because Duke did not validate that the fellows used the stipends for allowable expenses as cited in [REDACTED], our position regarding this finding has not changed.
- With regard to the reported non-compliance with the REU Site program award terms and conditions under NSF Award Nos. [REDACTED] and [REDACTED], the award's budget explicitly stated that Duke would pay the stipends in monthly installments, and the REU student letter stated that Duke would pay the stipends in three equal installments. Making a lump-sum stipend payment at the beginning of the program rather than making periodic payments throughout the program creates a risk that students will receive the stipend payment and then quit the program before earning the full amount of the stipend, leaving Duke with little ability to recover the unearned costs. Accordingly, our position regarding this finding has not changed.
- With regard to the reported non-compliance related to Duke's postdoctoral salary PSCs charged to NSF Award No. [REDACTED], we further reviewed the program announcement and the treatment of the incurred costs and have determined that it was appropriate for Duke to budget the postdoctoral salaries as PSCs. Accordingly, we have removed the finding.

### **Finding 9: Indirect Costs Not Appropriately Applied**

Duke charged two NSF awards a total of \$9,397 in unallowable expenses because it incorrectly applied indirect costs to PSCs that should have not have been accounted for as Modified Total Direct Costs (MTDCs) per Federal regulations,<sup>60</sup> NSF policy,<sup>61</sup> or Duke's Negotiated Indirect Cost Rate Agreement (NICRA),<sup>62</sup> as follows:

- In August 2016, Duke charged NSF Award No. [REDACTED] for \$8,183 in indirect costs assessed on participant lodging expenses incurred for a grant-related workshop.
  - *Duke agreed to reimburse NSF for these expenses.*

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<sup>60</sup> According to 2 CFR 200.68, MTDCs exclude equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, and PSCs.

<sup>61</sup> NSF PAPPGs 15-1 and 16-1, Part I, Chapter II, Section C.2.g. (v) state that indirect costs (F&A) are generally not allowed on PSCs.

<sup>62</sup> Duke's NICRAs dated May 10, 2010, and April 4, 2016, applicable as of the award dates for NSF Award Nos. [REDACTED] and [REDACTED], respectively, noted that MTDCs consisted of all salaries and wages, fringe benefits, materials, supplies, services, travel, and subgrants and subcontracts up to the first \$25,000 of each subgrant or subcontract (regardless of the period covered by the subgrant or subcontract) but did not include PSCs. Further, the NICRAs that Duke has received since August 2017 have specifically noted that PSCs are excluded from Duke's MTDC base.

- In April 2017, Duke charged NSF Award No. [REDACTED] for \$1,214 in indirect costs assessed on travel expenses incurred for participants to attend a grant-related conference.
  - *Duke agreed to reimburse NSF for these expenses.*

Duke did not have sufficient oversight in place to ensure that it appropriately segregated PSCs from other travel costs incurred in support of sponsored projects. As a result, we are questioning \$9,397 in indirect costs inappropriately applied on PSCs under two NSF awards. Duke concurred with \$9,397 of the questioned costs, as illustrated in Table 9.

**Table 9. Indirect Costs Not Appropriately Applied**

Description	NSF Award No.	Fiscal Year	Questioned Costs			Duke Agreed to Reimburse
			Direct	Indirect	Total	
August 2016 PSCs	[REDACTED]	2017	\$0	\$8,183	\$8,183	\$8,183
April 2017 PSCs	[REDACTED]	2017	0	1,214	1,214	1,214
	<b>Total</b>		<b>\$0</b>	<b>\$9,397</b>	<b>\$9,397</b>	<b>\$9,397</b>

Source: Auditor summary of identified exceptions.

**Recommendations**

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

1. Direct Duke to provide documentation to support that it has repaid or otherwise credited the \$9,397 of questioned indirect costs for which it has agreed to reimburse NSF.
2. Direct Duke to strengthen its administrative and management procedures related accounting for participant support costs. Updated procedures could include implementing an annual review of travel costs charged to sponsored awards that include funding for participant support costs to ensure that Duke is appropriately segregating travel costs incurred on behalf of participants in accounts to which Duke does not apply indirect costs.

**Duke University Response:** Duke did not indicate that it disagreed with the exceptions identified within this finding.

**Auditor’s Additional Response:** Our position regarding this finding has not changed.

**Finding 10: Indirect Costs Inappropriately Applied at the Provisional Rate**

Duke used the provisional indirect cost rates in effect as of the date grants were awarded throughout the life of the awards, rather than adjusting the rates it applied to those awards after

negotiating its final indirect cost rates and obtaining the cognizant agency’s approval.<sup>63</sup> As a result, Duke did not apply the appropriate negotiated indirect cost rates to direct costs accumulated on at least 31 NSF awards during the audit period, as illustrated in Table 10.

**Table 10. Indirect Costs Inappropriately Applied at the Provisional Rate**

NSF Award No.	NSF Award Date	Rate Applied	Appropriate Rate
	9/3/2010	56%	57%
	8/11/2010	56%	57%
	8/17/2010	56%	57%
	9/13/2013	57%	59%
	6/24/2013	57%	59%
	8/8/2013	57%	59%
	8/12/2013	57%	59%
	7/31/2013	57%	59%
	7/23/2013	57%	59%
	8/31/2013	57%	59%
	8/14/2013	57%	59%
	7/17/2013	57%	59%
	8/2/2013	57%	59%
	3/10/2014	57%	59%
	9/4/2014	57%	59%
	6/5/2014	57%	59%
	2/5/2014	57%	59%
	6/12/2014	57%	59%
	7/10/2014	57%	59%
	7/3/2014	57%	59%
	6/10/2014	57%	59%
	8/4/2014	57%	59%
	7/21/2014	57%	59%
	7/9/2014	57%	59%
	4/14/2014	57%	59%
	8/19/2014	57%	59%
	9/10/2014	57%	59%
	6/27/2014	46.5% <sup>64</sup>	59%
	2/13/2015	57%	59%
	4/27/2015	57%	59%
	7/3/2017	59%	60%

Source: Auditor summary of applicable indirect cost rates.

Although Federal regulations do require institutes of higher education to use the negotiated rates in effect at the time of an initial award throughout the life of the award,<sup>65</sup> because provisional

<sup>63</sup> Both 2 CFR 220, Appendix A, Section G.7.b. and 2 CFR 200, Appendix III, Section C.6 allow educational institutions to use provisional rates when they do not have a negotiated rate with the Federal government; however, both regulations also state that the educational institutions must adjust the provisional rate once they have negotiated the final rate and obtained the cognizant agency’s approval.

<sup>64</sup> This award was transferred from another University and Duke continued to apply that University’s indirect cost rate to this award.

<sup>65</sup> According to 2 CFR 220, Appendix A, Section G.7.a and 2 CFR 200, Appendix III, Section C.7, Federal agencies must use the negotiated rates in effect at the time of the initial award throughout the life of the Federal award.

rates are not negotiated rates,<sup>66</sup> Duke should have adjusted the provisional rates it was applying to its NSF awards once it had appropriately negotiated final, fixed, or predetermined rates.

Because the provisional rates that Duke applied were lower than the allowable negotiated final and predetermined rates, these exceptions did not result in any questioned costs; however, without updated policies and procedures in place to ensure that it uses the correct indirect cost rate, it is possible that Duke may overcharge sponsoring organizations for indirect costs in the future.

### ***Recommendations***

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

1. Direct Duke to strengthen its controls related to award set-up to ensure that it updates the accounts established for NSF awards during the provisional rate periods to apply indirect costs at the appropriate final, fixed, and/or predetermined rates established within applicable Negotiated Indirect Cost Rate Agreements.

**Duke University Response:** Duke disagreed with this finding. Specifically, Duke maintained that it appropriately applied the correct indirect cost rates in compliance with Federal regulations. Duke stated that the auditors cited 2 CFR 220, Appendix A, Section G.7.b. and 2 CFR 200, Appendix III, Section C.6, which address the rate that an educational institution should use when it does not have a negotiated rate with the Federal government. However, Duke believes that it would be more appropriate to refer to 2 CFR 220, Appendix A, Section G.7.a. and 2 CFR 200, Appendix III, Section C.7. This guidance applies to grantees that have approved F&A rates and states, "If negotiated rate agreements do not extend through the life of the Federal award at the time of the initial award, then the negotiated rate for the last year of the Federal award must be extended through the end of the life of the Federal award." Based on this guidance, Duke asserted that it applied the appropriate rate for 30 of the 32 instances identified in this finding. The remaining two instances included one instance in which Duke agreed to apply a lower rate because the award was a transfer from another institution. To avoid lowering the amount of funding available for the direct costs required to finish the project, Duke applied the negotiated "off-campus" F&A rate, as required by the approved F&A rate agreement.

**Auditors' Additional Comments:** While we removed an indirect cost rate exception identified for NSF Award No. [REDACTED] our position regarding the other 31 awards has not changed. Specifically, because these grants were awarded during provisional rate periods, and not during periods excluded from its negotiated rate agreement, we have not updated the criteria used for this exception. As a result, our position regarding this finding has not changed.

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<sup>66</sup> According to 2 CFR 220, Appendix A, Section G.7.a, provisional rates may be replaced by fixed or predetermined rates at any time during the year or they will be replaced by a final negotiated rate. In addition, 2 CFR 200, Appendix III, Section C.7 specifically states that negotiated rates include final, fixed, and predetermined rates and exclude provisional rates.

## **Finding 11: Non-Compliance with Duke Policies**

Duke did not always comply, or document that it complied with, its internal consultant/contractor, subaward, equipment, effort reporting, procurement, or other policies and procedures when incurring costs charged to NSF awards. Because these instances of non-compliance did not directly result in Duke charging unallowable costs to NSF awards, we are only noting these instances as compliance exceptions, as follows:

### ***Non-Compliance with Duke Consultant/Independent Contractor Policies***

We identified two instances related to two NSF awards in which Duke did not appropriately comply with its internal consultant/contractor policies, which require it to execute a research support services agreement (RSSA) and complete independent contractor checklists prior to consultants or contractors commencing services. Specifically:

- In November 2015, Duke charged NSF Award No. [REDACTED] for \$12,336 in consulting services provided before the parties executed the RSSA.<sup>67</sup>
- In June 2016, Duke charged NSF Award No. [REDACTED] for \$8,325 in consulting services provided before the parties executed the RSSA and before Duke completed the independent contractor checklist.<sup>68</sup>

### ***Non-Compliance with Duke Subaward Policies***

We identified 13 instances related to six NSF awards in which Duke did not comply with its internal subaward policies, which require PIs to approve subawardee invoices and OSP to perform a risk assessment on potential subrecipients before Duke may issue a subaward. Specifically:

- Duke did not provide documentation to support that the PIs for 6 NSF awards approved a total of 12 subaward invoices.<sup>69</sup>
- In March 2015, Duke awarded a subaward to the University [REDACTED] to perform work under NSF Award No. [REDACTED] before Duke personnel completed a subrecipient risk assessment.<sup>70</sup>

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<sup>67</sup> Duke Policy GAP 200.370, *Purchasing Services on Sponsored Funds*, requires purchasers to complete RSSAs when procuring services with a value between \$10,001 and \$100,000. Based on the workflow described in this policy, Duke should complete the RSSA before procuring the services.

<sup>68</sup> Duke Policy GAP 200.128, *Guidance on the Independent Contractor Checklist*, requires purchasers to complete an independent contractor checklist form when making payments to an individual and specifically states that purchasers should complete the form before the contractor commences the services.

<sup>69</sup> Duke Policy GAP 200.280, *Subrecipient Management*, Section IV. *Subrecipient Management/Roles and Responsibilities*, states that PIs are responsible for approving all subrecipient invoices for their projects.

<sup>70</sup> Duke Policy GAP 200.280 states that the Office of Research Contracts and the Office of Research Support are responsible for issuing subawards that are consistent with compliance risk, which OSP identifies through an initial or annual risk assessment.

***Non-Compliance with Duke Equipment Policies***

We identified two instances in which Duke did not comply with its internal equipment policies, which require Office of Sponsored Programs (OSP) approval for equipment purchases on Federal awards and do not allow capitalization of non-capital expenditures. Specifically:

- In May 2017, Duke transferred \$63,060 in equipment costs to NSF Award No. [REDACTED] without OSP approval.<sup>71</sup> These costs related to a specialized laser that Duke had originally purchased using non-sponsored funding.
- In August 2017, Duke inappropriately capitalized \$30,000 of non-capital expenditures charged to NSF Award No. [REDACTED]. Duke incurred these expenditures to purchase a 2-year subscription to a library database to enable personnel to perform grant-related research.<sup>72</sup>

***Non-Compliance with Duke’s Effort-Reporting Policy***

We identified four instances in which employees did not certify their efforts reports within the timeframe required under Duke’s effort reporting policy.<sup>73</sup>

**Table 11. Non-Compliance with Duke’s Effort Reporting Policy**

NSF Award No.	Effort Reporting Period	Effort Reporting Due Date	Effort Reporting Certification Date
[REDACTED]	7/1/2015 – 6/30/2016	9/30/2016	7/10/2017
[REDACTED]	7/1/2016 – 6/30/2017	9/30/2017	10/8/2017
[REDACTED]	7/1/2016 – 6/30/2017	9/30/2017	10/24/2017
[REDACTED]	7/1/2017 – 6/30/2018	9/30/2018	11/20/2018

Source: Auditor summary of identified instances of non-compliance with Duke’s internal effort reporting policies.

***Non-Compliance with Duke’s Procurement Policies***

We identified eight instances related to seven NSF awards in which Duke did not document that it complied with its procurement policies, which require consulting services to be supported by a

<sup>71</sup> Duke Policy GAP 200.100, *Capital Equipment Purchases on Sponsored Projects*, states that OSP is responsible for reviewing equipment purchases to ensure compliance with the terms of the award and to verify that Duke has charged the appropriate account code, as well as for attaching an Equipment Screening Form.

<sup>72</sup> Duke Policy GAP 200.050, *Plant & Equipment Capitalization*, states that Duke should capitalize expenditures for movable equipment if the items have an individual cost value of \$5,000 or more, are durable, and are free-standing (i.e., usable free of support from other equipment).

<sup>73</sup> Duke Policy, *Timeliness of Certifying Effort*, states that Duke expects employees to certify and process effort cards by the deadline dates indicated within its online Effort Certification Reporting Technology system.

scope of work and term sheet,<sup>74</sup> and, when the value of these services is greater than or equal to \$10,000, to be competitively bid or supported by a sole-source justification.<sup>75</sup> Specifically:

- In December 2015, Duke charged NSF Award No. [REDACTED] for \$7,725 in costs incurred to obtain online survey services for which Duke was unable to provide a documented scope of work for the contract, a term sheet, or an independent contractor checklist. In addition, Duke did not complete the purchase order for these services until after the vendor had provided the services.
  - Because the invoiced services were consistent with the grant budget, were supported by an invoice and purchase order, and were reported to NSF, we are not questioning any costs related to this exception.
- In February 2016, Duke charged NSF Award No. [REDACTED] for more than \$10,000 in costs incurred to obtain services from a contractor. Duke was unable to provide documentation supporting that it had appropriately procured this contract through competitive bidding activities or a sole-source justification.
  - Because Duke identified the vendor in the award budget and because the amounts that the contractor invoiced were consistent with the amounts and services outlined in the RSSA, we are not questioning any costs associated with this exception.
- In March 2016, Duke charged NSF Award No. [REDACTED] for website development consultant services at a cost in excess of \$10,000. Duke was unable to provide documentation to support that it had appropriately procured the services through competitive bidding activities or through completing a sole-source justification before the consultant provided the services.
  - Because the vendor appears to have been the only one able to provide the specific services requested and because Duke did complete a sole-source justification before charging the costs to the award, we are not questioning any costs associated with this exception.
- In April 2016, Duke charged NSF Award No. [REDACTED] for the purchase of a structured light scanner at a cost in excess of \$10,000. Duke was unable to provide documentation to support that it appropriately procured the scanner through competitive bidding activities or a sole-source justification.

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<sup>74</sup> Duke Policy GAP 200.370, *Purchasing Services on Sponsored Funds*, states that a completed independent contractor checklist and a completed scope of work and term sheet are required to procure services costing between \$2,500 and \$10,000, and that Procurement Services will issue a purchase order to the vendor for the procured services.

<sup>75</sup> Duke Policy GAP 200.101 states that grant managers and PIs are required to either obtain a minimum of three price or rate quotes or complete a Sole-Source Justification/Price Quote Selection Form for all service or material procurements that exceed \$10,000.

- Because the equipment appears to have been necessary to achieve the grant objectives and because the vendor selected appears to have been the only appropriate source for the equipment, we are not questioning any costs associated with this exception.
- In May 2016, Duke charged NSF Award No. [REDACTED] for the purchase of a [REDACTED] [REDACTED]<sup>76</sup> at a cost in excess of \$10,000. Duke was unable to provide documentation to support that it appropriately procured the [REDACTED] through competitive bidding activities or a sole-source justification.
  - Because the University [REDACTED] appears to have been the only appropriate source for the [REDACTED] and because Duke justified its need for the [REDACTED] at the time of the purchase, we are not questioning any costs associated with this exception.
- In September 2016 and February 2017, Duke charged NSF Award No. [REDACTED] for the development of a mobile app at a cost in excess of \$10,000. However, Duke did not formally document its competitive bidding process for selecting the vendor.
  - Because Duke was able to provide e-mails demonstrating that it considered more than three vendors when selecting the contractor, we are not questioning any costs associated with this exception.
- In September 2017, Duke charged NSF Award No. [REDACTED] for contractor assistance in performing survey services to support grant-related research, at a cost in excess of \$10,000. Duke was unable to provide documentation to support that it appropriately procured these services through competitive bidding activities or a sole-source justification.
  - Because the vendor selected appears to have been the only one able to provide the specific services requested by Duke and because Duke did not charge the expenses to the grant until it had completed all procurement steps, we are not questioning any costs associated with this exception.

### ***Non-Compliance with Duke Purchasing Card Policies***

We identified five instances related to five NSF awards in which Duke did not comply with its internal policies, which set purchasing limits of \$3,000 for travel expenses<sup>77</sup> and state that expenses should be posted to Duke’s GL within 30 days of the purchase card transaction. Specifically:

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<sup>76</sup> Duke stated that it purchased a [REDACTED] to perform [REDACTED].

<sup>77</sup> Duke Policy GAP 200.024, *Corporate Card Purchases*, states, “The card may be used for most purchases up to \$1,500 and travel related expenses up to \$3,000.”

- We identified one instance related to a conference sponsored by NSF Award No. [REDACTED] in which the project coordinator requested that the vendor split reception expenses into multiple purchases under \$2,000 each to adhere to credit card transaction limits.<sup>78</sup>
- We identified one instance in which Duke was unable to provide documentation to support that it approved an increased purchasing limit to enable the PI of NSF Award No. [REDACTED] to purchase airfare that exceeded the \$3,000 purchase card limit.
- We identified three instances related to NSF Award Nos. [REDACTED] and [REDACTED] in which Duke did not post purchase card expenses within 30 days of the purchase card transaction date.<sup>79</sup>

### *Non-Compliance with Duke Service Center Policies*

We identified two instances related to one NSF award in which Duke did not comply with its ISP policies, which state that service centers must bill for services using rates that are based on the costs incurred.<sup>80</sup> Specifically:

- In September 2015 and August 2016, Duke's [REDACTED] [REDACTED] billed NSF Award No. [REDACTED] for chemical analysis services using rates that were not supported by the [REDACTED] rate sheet.
  - Because the rate charged was lower than the rate identified on the [REDACTED] rate sheet, we are not questioning any costs associated with this exception.

Duke did not have adequate procedures in place to ensure that it consistently complied with, and documented its compliance with, its internal policies and procedures. Specifically, Duke's internal procedures were not sufficient to ensure:

- Purchasers completed and retained all required documentation to support services provided by consultants before the services occur.
- PIs reviewed and approved all subawardee invoices before Duke issued payment.
- OSP approved equipment costs re-allocated to sponsored projects after Duke initially charged the expenses to non-sponsored funding sources.

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<sup>78</sup> Duke noted that the coordinator split the purchase into multiple purchases of less than \$2,000 each to circumvent the credit card transaction limits because the hotel required that the coordinator pay using a credit card rather than an accounts payable check request and the coordinator was not able to request a transactional limit increase at that time.

<sup>79</sup> Duke Policy GAP 200.027, *Expense Reports – General Guidelines and Procedures*, states that, to ensure the accuracy of Duke's GL all reimbursement and corporate card transactions should be posted within 30 days.

<sup>80</sup> Duke Policy GAP 200.300, *Service Center Administration*, states that service centers must charge users for services using rates that are based on the costs incurred.

- Duke excluded computer database access costs from its capital asset account.
- All personnel certified their effort before the mandated due date.
- Duke appropriately performed and documented competitive bidding activities or sole-source justifications before procuring the goods or services.
- Personnel did not split expenses to circumvent corporate purchase card limits.
- Duke appropriately documented all exceptions to purchase card limits.
- ISPs billed for internal services using the rates included within their approved rate sheets.

As a result, we identified 37 instances in which Duke did not comply with its internal policies when charging costs to NSF awards, as illustrated in Table 12.

**Table 12. Non-Compliance with Duke Policies**

NSF Award No.	Compliance Exception Identified
	RSSA Not Completed in Accordance with Consultant/Independent Contractor Policies
	RSSA Not Completed in Accordance with Consultant/Independent Contractor Policies
	Independent Contractor Checklist Not Completed in Accordance with Consultant/Independent Contractor Policies
	June 2016 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	October 2016 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	September 2016 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	April 2016 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	October 2016 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	January 2017 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	July 2017 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	September 2017 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	December 2017 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	March 2018 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	April 2018 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	May 2018 Subaward Invoice Not Approved in Accordance with Duke Subaward Policies
	Subaward Issued Prior to Completion of Subrecipient Risk Assessment
	Equipment Expense Not Approved by OSP
	Database Inappropriately Capitalized as Equipment
	September 2016 Effort Report Not Certified by Due Date
	September 2017 Effort Report Not Certified by Due Date
	September 2017 Effort Report Not Certified by Due Date
	September 2018 Effort Report Not Certified by Due Date
	December 2015 Inappropriately Procured Service Costs
	February 2016 Inappropriately Procured Service Costs
	March 2016 Inappropriately Procured Service Costs
	April 2016 Inappropriately Procured Service Costs

NSF Award No.	Compliance Exception Identified
	May 2016 Inappropriately Procured Service Costs
	September 2016 Inappropriately Procured Service Costs
	February 2017 Inappropriately Procured Service Costs
	September 2017 Inappropriately Procured Service Costs
	Expenses Split to Circumvent to Corporate Card Limits
	Corporate Card Limits Exceeded with No Documented Approval
	Corporate Card Transaction Not Posted within 30 Days
	Corporate Card Transaction Not Posted within 30 Days
	Corporate Card Transaction Not Posted within 30 Days
	September 2015 ISP Invoice Did Not Use Approved ISP Rates
	August 2016 ISP Invoice Did Not Use Approved ISP Rates

Source: Auditor summary of identified exceptions.

### ***Recommendations***

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

1. Direct Duke to strengthen its administrative and management procedures related to procuring consultant services. Updated processes could include:
  - a. Providing annual training to Principal Investigators and other departmental personnel responsible for procuring consulting services to ensure they are aware that, when procuring services with a cost exceeding \$2,500, they must work with Duke’s Procurement Services team to complete a documented scope of work for the services provided, a payment term sheet, an independent contractor checklist, and a purchase order.
  - b. Implementing a control to flag any service provider paid more than \$2,500 within a single fiscal year without an approved purchase order in place.
  
2. Direct Duke to strengthen its policies and procedures related to its subaward payment approval process. Updated processes could include:
  - a. Implementing a control to flag invoices that the Principal Investigator did not approve or to prevent the system from processing payments that have not been properly approved.
  - b. Implementing a control that flags and puts a hold on potential payments to subawardees that have not undergone an annual risk assessment within one year of the proposed payment date until the Office of Sponsored Programs has completed an updated risk assessment.
  
3. Direct Duke to strengthen its procedures for approving cost transfers that involve equipment purchases. Updated procedures should require the Office of Sponsored

Programs to approve all cost transfers that result in equipment being charged to a sponsored project.

4. Direct Duke to update its current effort reporting processes to ensure that personnel certify their effort in compliance with Duke's internal policies. Updated processes could include:
  - a. Sending more frequent reminders to employees during the effort certification process to remind them to certify their effort on time.
  - b. Establishing penalties for, or imposing restrictions on, employees who do not certify effort in a timely manner.
5. Direct Duke to strengthen its administrative and management procedures related to its competitive bidding process. Updated procedures could include requiring procurement personnel to verify that they documented competitive bidding activities or completed a sole-source justification form before Duke can issue more than \$10,000 in payments to the vendor during a single fiscal year.
6. Direct Duke to strengthen its policies and procedures surrounding corporate purchase cards. Processes could include:
  - a. Requiring all purchase card holders to take an annual training that addresses procurement card thresholds, including how and when to request transactional limit increases and how to obtain and document approval of these increases.
  - b. Implementing a control to flag instances in which daily purchases from a single vendor exceed the purchase card limit.
7. Direct Duke to strengthen its administrative and management procedures related to internal service provider billings. Updated procedures could include implementing controls that prevent an internal service provider from billing for services using rates that are not included on the internal service provider's approved rate sheet.

**Duke University Response:** Duke partially disagreed with the reported instances of non-compliance with its policies. Specifically:

- With regard to the reported non-compliance with its consultant/independent contractor policy for NSF Award Nos. [REDACTED] and [REDACTED] Duke disagreed with the audit team's interpretation and believes that it met the intent of the policy. Duke stated that the policy's intent was to define the internal control environment for procurement activities and to ensure compliance with Federal regulations and cost principles. Further, Duke believes the internal controls were effective in ensuring the completion of all required documents, including review and approval by all required parties and performance of a suspension and debarment check before issuing payment to the vendor(s) and allocating

the cost to the NSF award.

- With regard to the reported non-compliance with its subaward policy, Duke disagreed that the policy requires both the PI and the project’s grant manager to review subaward invoices. Duke stated that the policy assigns grant managers responsibility for “oversight and monitoring of subrecipient fiscal matters, including review and approval of invoices with escalation of questionable costs to the PI.” The grant managers approved payment of the subaward invoices in each of the identified exceptions.
- With regard to the reported non-compliance with its subaward policy on NSF Award No. [REDACTED] Duke maintained that it followed the business process described in its 2015 subrecipient management policy. Specifically, Duke stated that the pre-award offices had primary responsibility for completing subrecipient risk assessments, and that its business process allowed it to issue a subaward agreement without performing an individually documented risk assessment under specific circumstances. Duke issued the questioned subaward to [REDACTED], which receives [REDACTED] subawards and hundreds of millions of dollars of Federal funding annually; Duke therefore views [REDACTED] as a low-risk partner.
- With regard to the reported non-compliance with its equipment policy on NSF Award No. [REDACTED], Duke maintained that it did not materially deviate from the policy. OSP performed the requisite initial review of the procurement request for the equipment and returned the request because the PI clearly had not included the equipment in the award budget. The PI subsequently submitted a re-budgeting request and obtained the appropriate approval, and Duke transferred the cost to the NSF award.
- With regard to the reported non-compliance with its equipment policy on NSF Award No. [REDACTED], Duke acknowledged that it had used the incorrect account code when allocating the original procurement action to the NSF award. However, Duke stated that it later reclassified the procurement action to the correct non-capitalized accounting code without incurring any financial impact to the NSF award.
- With regard to the reported non-compliance with its effort-reporting policy on NSF Award Nos. [REDACTED] and [REDACTED], Duke stated that the policy does not define the timeframe in which personnel must certify their effort; instead, Duke ensures that personnel appropriately certify their effort reports by the end of the calendar year.
- With regard to the reported non-compliance with its procurement policy on NSF Award No. [REDACTED] Duke disagreed with the audit team’s interpretation of the policy. Duke maintained that the intent of the policy was to define the internal control environment for procurement activities and to ensure compliance with Federal regulations and cost principles. Duke believes the internal controls were effective in ensuring the completion of all required documents, including review and approval by all required parties and the performance of a suspension and debarment check before issuing payment to the vendor and allocating the cost to the NSF award. However, Duke does not believe that the independent contractor checklist applied to the exception identified, as the vendor was

not an individual or a sole proprietor.

- With regard to the reported non-compliance with its procurement policy on NSF Award Nos. [REDACTED] and [REDACTED], Duke maintained that it did not materially deviate from the policy. Specifically, two of the transactions identified involved a vendor that the PI had specifically named in the proposal, which Duke asserted removed the requirement to compete the acquisition or prepare a sole-source justification. Duke acknowledged that it was not always timely in obtaining the required documentation, reviews, approval, and suspension/debarment checks, but stated that it completed these actions before issuing payment to the vendor.
- With regard to the reported non-compliance with its procurement policy on NSF Award Nos. [REDACTED] and [REDACTED] Duke stated that the PI and the project team completed the competitive bidding process through email, rather than through the more formal procedures used by the procurement team. Duke further asserted that it performed a price analysis.
- With regard to the reported non-compliance with its procurement policy on NSF Award No. [REDACTED], Duke emphasized the unique nature and sourcing of the equipment, which the PI highlighted in the published research. Specifically, Duke stated that the unique nature of the equipment supports Duke's decision to complete the purchase without documenting a formal sole-source justification.
- With regard to the reported non-compliance with its purchase card policy on NSF Award No. [REDACTED], Duke maintained that it did not materially deviate from the policy. Duke stated that the hotel vendor would not provide a payable invoice or accept a check for the services, instead requiring Duke to use a purchase card. The hotel vendor did not communicate this restriction to the project coordinator in advance, and the project coordinator was therefore unable to request an increase to the purchase card limit. Both the grant manager and the institutional finance team reviewed the costs before allocating them to the award.
- With regard to the reported non-compliance with its purchase card policy on Award No. [REDACTED], Duke maintained that it made all of the supporting documentation available to the audit team. Duke further noted that the credit limit increase was requested by the local department for the card holder and was approved by the institutional card office, as required by the purchase card policy, and that the parties documented the credit limit increase through email.
- With regard to the reported non-compliance with its purchase card policy on NSF Award Nos. [REDACTED] and [REDACTED] Duke maintained that it did not materially deviate from the policy, which was intended to support the timely posting of purchase card transactions. Duke stated that the established controls ensure that appropriate personnel review and approve purchase card transactions to reduce the risk that Federal sponsors will reimburse unapproved transactions. Duke acknowledged that for the three instances in which it did not post purchase card expenses to NSF awards in a timely manner, the

actual time period for posting the expense was 32, 45, and 48 days, respectively.

- With regard to the reported non-compliance with its service center policy on NSF Award No. [REDACTED], Duke disagreed with the auditor's interpretation of the facts. Specifically, Duke stated that the rate sheet it provided included an addendum verifying that the ISP could offer reduced rates if project staff assisted in performing the sample analysis, as was the case in this instance.

**Auditor's Additional Response:** Our position regarding this finding has not changed. Specifically:

- With regard to the reported non-compliance with its consultant/independent contractor policy for NSF Award Nos. [REDACTED] and [REDACTED] Duke stated that it had reviewed and approved all the appropriate documents before making payments to the vendor and allocating costs to the awards. However, Duke did not complete the entire documentation package until after the vendor had already begun providing services. As a result, our position regarding this finding has not changed.
- With regard to the reported non-compliance with its subaward policy, although Duke stated that the grant manager was responsible for overseeing and monitoring subrecipient fiscal matters, including reviewing and approving invoices, the policy further states that the PI is responsible for approving invoices that the subrecipient submits during the project. As a result, our position regarding this finding has not changed.
- With regard to the reported non-compliance with its subaward policy on NSF Award No. [REDACTED] Duke stated that it had complied with the 2015 version of its subrecipient policy. However, the policy that Duke provided us for review states that the Office of Research Contracts and the Office of Research Support must issue subawards consistent with compliance risk, based on an initial or annual risk assessment. As a result, because Duke did not complete a UNC risk assessment before issuing the subaward, our position regarding this finding has not changed.
- With regard to the reported non-compliance with its equipment policy on NSF Award No. [REDACTED], Duke acknowledged that, although OSP had reviewed the original procurement request, the PI was unable to allocate the equipment to the award until [REDACTED] had submitted a re-budget request and obtained the appropriate approval. However, Duke's policy requires OSP to review equipment purchase requests to ensure that the equipment meets the terms of the award. In this instance, Duke had already purchased the equipment with non-sponsored funding and was simply allocating the costs to the award. Because OSP did not have the opportunity to review and approve the equipment purchase in accordance with the terms of the award, or to complete the equipment screen form, our position regarding this finding has not changed.
- With regard to the reported non-compliance with its equipment policy on NSF Award No. [REDACTED] because Duke acknowledged that it had inappropriately capitalized the

subscription, our position regarding this finding has not changed.

- With regard to the reported non-compliance with its effort-reporting policy on NSF Award Nos. [REDACTED] and [REDACTED] although Duke stated that its policy does not include a defined timeframe for certifying effort reports, the policy does state that personnel must certify and process effort reports by the deadline dates within the system. At the time of our testing, Duke had established deadlines within the system, and Duke personnel did not certify the effort reports identified in the finding within the required timeframe. As a result, our position regarding this finding has not changed.
- With regard to the reported non-compliance with its procurement policy on NSF Award No. [REDACTED], Duke stated that it had reviewed and approved all of the appropriate documents before making payments to the vendor and allocating costs to the award. However, the documentation that Duke provided to support the transaction did not meet the standards outlined in Duke's procurement policy. Because Duke did not execute the purchase order until after the vendor had completed the services and the documentation provided did not comply with Duke's policy, our position regarding this finding has not changed.
- With regard to the reported non-compliance with Duke's procurement policy on NSF Award Nos. [REDACTED] and [REDACTED], Duke policy requires personnel to complete a sole-source justification to support purchases for which they solicited price quotations from fewer than three sources. Although Duke identified the vendor in the budget, it did not justify the vendor selection through either competitive bids or a sole-source justification. Because the policy does not include an exception for vendors named in the proposal, our position regarding this finding has not changed.
- With regard to the reported non-compliance with Duke's procurement policy on NSF Award Nos. [REDACTED] and [REDACTED], we did not question any costs because Duke documented and considered multiple bids for the services; however, these bids were of an informal nature. Duke's procurement policy states that the appropriate method for procuring goods or services through competitive bids or sole-source purchases includes completing the sole-source justification/price quote selection form. Because Duke did not complete or maintain either this document or any other formal documentation of the competitive bids, our position regarding this finding has not changed.
- With regard to the reported non-compliance with Duke's procurement policy on NSF Award No. [REDACTED] we did not question any costs because the customized product appeared to be necessary to achieve the grant objectives; however, Duke's procurement policy requires personnel to complete a sole-source justification to support purchases for which they solicited price quotations from fewer than three sources. We acknowledge the custom nature of the equipment; however, because the procurement policy does not exclude custom equipment from the sole-source justification requirements, our position regarding this finding has not changed.

- With regard to the reported non-compliance with Duke’s purchase card policy on NSF Award No. [REDACTED], because the policy limits travel-related purchases to \$3,000 and splitting transactions to evade this limit violates the policy, our position regarding this finding has not changed.
- With regard to the reported non-compliance with Duke’s purchase card policy on Award No. [REDACTED] because the documentation that Duke provided did not include support demonstrating that Duke obtained the appropriate approvals to increase the credit limit, our position regarding this finding has not changed.
- With regard to the reported non-compliance with its purchase card policy on NSF Award Nos. [REDACTED] and [REDACTED] Duke acknowledged that it posted purchase card expenses to NSF awards outside the required 30-day timeframe in three instances. Because Duke is required to post transactions within 30 days to ensure the accuracy of its GL, our position regarding this finding has not changed.
- With regard to the reported non-compliance with Duke’s service center policy on NSF Award No. [REDACTED] although Duke did provide a rate sheet with an addendum indicating that the ISP was permitted to charge a lower rate if different staff performed the sample analysis, this lower rate is not defined on the rate sheet or supported by the change in costs incurred if different staff performed the sample analysis, as required by Duke’s policy. Accordingly, our position regarding this finding has not changed.

COTTON & COMPANY LLP



Michael Gillespie, CPA, CFE  
Partner  
August 31, 2020

**APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING**

NATIONAL SCIENCE FOUNDATION  
ORDER # 140D0418F0504  
PERFORMANCE AUDIT OF INCURRED COSTS  
DUKE UNIVERSITY

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Questioned Costs		Total
		Unsupported	Unallowable	
1	Unallowable Expenses	\$0	\$270,408	\$270,408
2	Inadequately Supported Expenses	0	246,635	246,635
3	Inappropriately Established Supplemental Salary Appointments	0	77,923	77,923
4	Inappropriate Drawdowns of Expiring Appropriations	0	29,892	29,892
5	Expenses Not Appropriately Allocated to NSF Awards	0	28,719	28,719
6	Goods and Services Not Appropriately Procured	0	23,406	23,406
7	Insufficient Review of Payments to the [REDACTED]	0	12,526	12,526
8	Non-Compliance with NSF Award Terms and Conditions	0	10,000	10,000
9	Indirect Costs Not Appropriately Applied	0	9,397	9,397
10	Indirect Costs Inappropriately Applied at the Provisional Rate	0	0	0
11	Non-Compliance with Duke Policies	0	0	0
<b>Total</b>		<b><u>\$0</u></b>	<b><u>\$708,906</u></b>	<b><u>\$708,906</u></b>

**APPENDIX B: DUKE UNIVERSITY RESPONSE**



August 17, 2020

Michael Gillespie, CPA, CFE  
Cotton & Company, L.L.P  
635 Slaters Lane, 4<sup>th</sup> Floor  
Alexandria, VA 22314

Re: Duke University – Performance Audit of Incurred Costs for National Science Foundation (“NSF”) Awards for the period of October 2015 to September 2018

Dear Mr. Gillespie,

We submit these comments on behalf of Duke University (“DU” or “the University”) in response to the July 17, 2020 Cotton & Company draft Audit Report.

DU appreciates this opportunity to include management’s perspective on the draft Audit Report, as well as the broader opportunity offered by this audit experience to continue to enhance its internal control environment. Although the Audit Report contains a number of findings, the University does not believe these findings reflect systemic issues in its award management systems. Rather, while the University concurs with a portion of the questioned costs, it firmly believes that the vast majority of them are allocable, allowable and reasonable based on Federal regulations, NSF award terms and conditions and DU policy. With respect to the various recommendations in the draft Audit Report, DU welcomes thoughts on how it might improve its robust set of policies, procedures and business processes that allow it to effectively manage NSF awards. To that end, the University is assessing each recommendation from Cotton & Company (“Auditors”) and, with input from NSF during the resolution process, will seek to implement those that will enhance its current compliance environment.

Finding 1: Unallowable Expenses

DU does not agree with the following elements of Finding 1:

“Duke charged one NSF award for \$94,817 in project coordinator salary costs without receiving the NSF approval required for administrative or clerical salary expenses to be allowable as direct costs under Federal and NSF policies.”

- DU does not agree that these costs are unallowable. The individual identified in this finding as a project coordinator for the award was employed by the Center managing this project as a Senior Research Associate and was listed by the award’s Principal Investigator (“PI”) in the progress report to NSF as one of the five members of the project’s leadership team. In addition to largely programmatic responsibilities (conducting interviews, developing surveys, disseminating results, etc.), this individual’s responsibilities included a limited number of administrative functions, such as tracking participant progress in the project database. Notably, these responsibilities were identified in the award’s budget justification that NSF accepted. In the proposal, these duties were associated with undergraduate student research assistants. As the project

progressed, however, the PI determined that the project required a more senior person, here the Senior Research Associate position at issue, who could carry out substantial and necessary programmatic responsibilities while also covering the limited administrative functions that had been allocated to undergraduate students. Notably, NSF had already approved the direct charging of those functions to this project. These charges should be accepted.

The Auditors questioned costs associated with premium class airfare (and in one case a first-class train ticket). The relevant awards include: NSF Award No. [REDACTED] (airfare and train tickets); NSF Award No. [REDACTED] (airfare); and NSF Award No. [REDACTED] (airfare). DU disagrees with these findings for the following reasons.

- First, several of the questioned costs relate to trips taken by a single individual who has suffered from a medical condition [REDACTED] that required first-class travel, as reflected in a note from [REDACTED] physician that was provided to the Auditors. Notably, Federal regulations [2 CFR 200.474(e)(1)(v)] state that upgrades from economy class airfare are allowable when justified by a traveler's medical needs; yet, the Auditors questioned these costs on the basis that DU did not obtain a doctor's note for each trip. The Federal regulations do not require such a trip-by-trip justification; thus, these charges should be accepted.
- Second, the cost of a first-class train ticket is expressly allowable per the NSF policy in effect at the time of this travel [NSF PAPPG Chapter VI.F.1.a(ii)] – "A train, bus or other surface carrier may be used in lieu of, or as a supplement to, air travel at the lowest first-class rate by the transportation facility used."
- Third, DU reserves the right to discuss during the audit resolution process the allowability of the multiple types of economy class airfare per the effective NSF policy at the time of this travel. [NSF PAPPG Chapter VI.F.1.a(ii)]

"Duke charged NSF Award No. [REDACTED] a grant awarded to support Duke's [REDACTED] [REDACTED] which is a collaboration between Duke and [REDACTED] for \$43,505 in expenses that Duke incurred to sponsor a new collaboratively-managed research center."

- DU does not agree that these costs are unallowable. In the annual progress report submitted by DU to NSF in October 2014, the PI provided a significant level of detail regarding the project activities planned to occur in the following budget period (December 2014 through November 2015), including an entire section on the transition plans for the current [REDACTED] center to move to its successor entity [REDACTED] after the project's end. The transition activities described in the October 2014 progress report represented neither a change in scope nor in project objectives. The costs at issue are squarely within the ambit of the activities described in the October 2014 progress report. Seven months after the progress report submission, DU requested a second no cost extension in May 2015, describing *additional* activities beyond those included in the 2014 annual report. The Auditors' conclusion regarding the questioned costs, which relate to the activities described in the accepted progress report, was based on an unreasonable and retroactive interpretation of NSF's decision to deny the second no cost extension. Denial by NSF of the May 2015 second no cost extension request was based on a NSF policy restriction against second no cost extensions for cooperative agreements. That decision has no bearing on the allowability of the activities described in the October 2014 progress report, which was accepted by NSF.

Finding 2: Inadequately Supported Expenses

DU does not agree with the following elements of Finding 2:

“Duke charged NSF Award No. [REDACTED] for \$228,141 in computer services provided by OIT.”

- DU does not agree that these costs are unallowable. The Auditors claimed that the costs were based on “unsupported, generalized salary amounts and estimated effort percentages” as reflected in the award’s proposal budget. DU disagrees. The project PI worked closely with the Duke Office of Information Technology (OIT) leadership at the time of the proposal to generate detailed commitments and estimated costs on an individual-by-individual OIT employee basis to complete the specific project aims. DU provided documentation establishing that the actual OIT staff member performing each of the roles described in the proposal had an actual salary in excess of the budgeted amount. Additionally, DU provided confirmation that each OIT staff member committed the estimated level of effort required to complete the specific aims. OIT staff members were specifically named in the award proposal, were included in the personnel listing of the progress reports submitted to NSF and were identified as co-authors on publications listed in the progress reports submitted to NSF. The Auditors did not question the benefit of these costs to the award, and the University has documented that the actual costs to DU exceeded the amount allocated to the NSF award.

“Duke charged NSF Award No. [REDACTED] for \$3,000 in expenses incurred to enable a student to participate in a grant-sponsored fellowship program. Duke provided the student’s fellowship offer letter, which stated that the student was eligible to receive ‘up to \$3,000 towards housing and travel costs’; however, Duke did not request or maintain documentation of the student’s actual housing or travel costs to support that the student was eligible for the full \$3,000.”

- DU does not agree that these costs are unallowable. The program solicitation (NSF [REDACTED]), the proposal and the award agreement did not include any statement regarding the maximum amount allowable as a housing/travel allowance for the participating fellows. There are no associated requirements for the grantee institution to collect and review documentation of how a fellow spent their stipend, which may be considered taxable income to the fellow, and the Auditors cited none. This cost should be accepted.

“Duke charged NSF Award No. [REDACTED] for a \$9,000 stipend paid to a student that participated in a summer training program that was not supported by the student’s offer letter. As the grant’s budget only included \$3,000 for participant stipends, the additional \$6,000 paid to this student is not supported as an allowable or reasonable expense.”

- DU does not agree that these costs are unallowable. The award’s proposal budget as submitted to NSF stated that the request was for “\$3,000 per summer to defray the cost of a partial stipend for this student training.” DU provided a justification during the audit process for the context of this \$9,000 stipend provided during the last summer of fellowships of the award; there had been other sources of stipend support available to previous fellows (thus the proposal budget’s request to *defray* stipends rather than fully support) that were not available to this fellow. While prior approval is required from NSF to rebudget funds *out of* the participant support category, there is no prior approval required to rebudget additional funds *into* participant support. This cost should be accepted.

Finding 3: Inappropriately Established Supplemental Salary Appointments

DU does not concur with this finding.

“Duke charged six NSF awards a total of \$77,923 in supplemental salary expenses that were not appropriately supported, and/or were not appropriately based on the employee’s institutional base salary (IBS).”

- DU does not agree with this finding as it specifically followed all internal controls and procedures related to hiring staff/faculty through its human resource processes. For some NSF projects, DU needs to hire individuals for a specific project of limited duration. The University has two methodologies for hiring individuals for this type of temporary project based work. If the individual being hired was a prior employee who had an established IBS prior to leaving the University, then their rate of pay upon being re-hired is based on their last DU IBS plus any applicable DU cost of living increases. In cases where the individual was not previously associated with DU, or was a student with no prior DU IBS, then payments are established by the hiring department and must fall within the University’s specified compensation standards. These payments are then centrally reviewed for reasonableness prior to being made. The Auditors noted no concerns with the allocability or reasonableness of the payments with regard to the prior DU employees, yet did not appear to take into account the hiring controls noted above that are applied to individuals with no prior DU affiliation. This is the identical hiring and salary setting process that the University utilizes for its permanent employees, thus DU disagrees that this process results in any inappropriately supported grant payments and has provided the Auditors with considerable documentation of the reasonableness of all payments.

Finding 4: Inappropriate Drawdowns of Expiring Appropriations

DU does not concur with this finding.

“Duke inappropriately drew down \$29,892 from NSF’s ACM\$ [Awardee Cash Management System] to cover expenses it might incur after an award’s funding appropriation expired.”

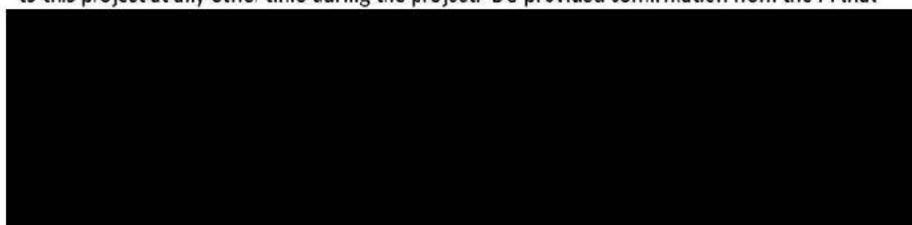
- DU does not agree that these costs are unallowable. The “cancelling funds” notices provided by NSF to DU in 2015 and 2016 provided clear instruction that grantees had “until September 23<sup>rd</sup> to make your final payment requests” for awards funded by the expiring appropriations, and that “NSF will not accept additional costs on the canceling funds after September 23 even if the project end date extends past this date”. As NSF was equating its deadline for “requesting payment” with its deadline for “additional costs”, a reasonable conclusion is that NSF was requiring payment requests for all anticipated project costs to be submitted by the published deadline. This is precisely the approach DU followed, including the return of project funds not incurred for allowable project costs within the period of performance as defined by NSF.

Finding 5: Expenses Not Appropriately Allocated to NSF Awards

DU does not agree with the following elements of Finding 5:

“Duke charged NSF Award No. [REDACTED] for costs invoiced by a Duke internal service center for chemical analyses performed on [REDACTED] samples [that do not appear] allocable as submitted annual reports only highlight analysis of [REDACTED] samples.”

- DU does not agree that these costs are unallowable. The Auditors based their determination that a response from the PI about a single item on a DU service center invoice for a January 2015 sample [REDACTED] should be extrapolated to signify that no [REDACTED] samples could be allocable to this project at any other time during the project. DU provided confirmation from the PI that

Finding 6: Goods and Services Not Appropriately Procured

DU does not concur with this finding.

“Duke charged NSF Award No. [REDACTED] for \$6,280 in consultant fees that were not supported by a purchase order, scope of work, or term sheet.”

- DU does not agree that these costs were unallowable. The Auditors did not identify any compliance issues related to Federal regulations for this cost. Moreover, the questioned cost was in compliance with the relevant University policy, which requires a purchase order for each procurement of services in excess of \$2,500. Each of the costs reviewed by the Auditors were procurement actions of services for \$1,500 each within separate budget periods of the project; additional payments of \$1,000 each were provided to the consultants for travel expenses. These costs were not subject to the internal DU requirements identified by the Auditors.

“Duke charged NSF Award No. [REDACTED] for \$17,126 in costs incurred by an internal service provider to purchase object-based storage nodes without performing any competitive bidding activities, or completing a sole source justification.”

- DU does not agree that these costs are unallowable. The costs were one component of a major renovation project managed by DU’s construction management department, and were specifically identified in the award’s proposal budget. The construction management department has responsibility for coordinating all such large technology purchases that are part of capital projects, and the selected vendor had previously been identified as the most competitive source for IT components such as these object-based storage nodes. It would not be reasonable to obtain new bids from the limited pool of vendors with every new capital project for this type of IT component.

Finding 7: Insufficient Review of Payments to the [REDACTED]

DU does not agree with the following elements of Finding 7:

“Duke did not sufficiently review \$12,526 of costs claimed on an NSF award [REDACTED] to ensure the costs were reasonable, allocable, or allowable. Specifically...\$10,144 in indirect costs inappropriately applied to PSCs; \$1,984 in costs for which [REDACTED] \$360 in PSC funding that [REDACTED] had inappropriately used [REDACTED] who were Duke employees; \$38 [REDACTED] for taxi costs claimed for an individual who was not included in the participant list for the NSF sponsored program.”

- DU does not agree that all of these costs are unallowable. Of the \$1,984 identified as missing third-party receipts, DU provided a valid third-party receipt for \$1,327 to support the associated direct cost (plus \$345 of F&A costs). That amount should be accepted.

While the Auditors did not identify the costs of housing the participants in the remote research stations as unallowable costs, the Auditors stated these fees “were not reviewed by Duke to ensure the costs invoiced were accurate or reasonable.”

- DU maintains that it was appropriate for [REDACTED] for the [REDACTED] organizations.

Finding 8: Non-Compliance with NSF Award Terms and Conditions

DU does not concur with this finding.

“Duke charged NSF Award No. [REDACTED] for \$10,000 in costs incurred for two Graduate Research Fellowship Program students’ GRIP stipends [and] did not request or maintain documentation to support that the GRIP stipends were only used to cover allowable program expenses.”

- DU does not agree that these costs are unallowable. The guidance for the fellowship published by NSF at the time of this award [REDACTED] defines the grantee’s responsibilities, including an obligation to “disburse the \$5,000 internship allowance to the Fellow” and “report the expended GRIP allowance (\$5,000) for each Fellow on the GRFP Program Expense Report.” There is no reference in [REDACTED] or in the broader GRFP guidance [REDACTED] that a grantee institution is responsible for collecting and reviewing documentation of how a fellow spent their stipend, which may be considered taxable income to the fellow.

While not identifying any concerns with the allowability of costs, the Auditors highlighted that “Duke did not draw down or disburse award funding in accordance with the budgets established for two NSF REU awards [...] or in the REU award letters.”

- DU does not agree there was cause to express concerns with the management of these REU awards. DU maintains that the *timing of the delivery* of these individual payments is not relevant, and reaffirms the responses previously provided that the internal control environment ensures that only allowable costs fully benefitting and allocable to the REU program are included in the project’s total costs.

While not identifying any concerns with the allowability of costs, the Auditors highlighted that “Duke inadvertently included funding to support post-doctoral employee salaries in the PSC section of the budget.”

- DU does not agree there was cause to express concerns with the budgeting or payment of these costs. DU maintains that the NSF Program Announcement for this award [REDACTED] both allows salaries and fringe benefits for postdoctoral associates *and* directly instructs applicants to include these as “Participant Costs in Section F of the budget page.”

Finding 10: Indirect Costs Inappropriately Applied at the Provisional Rate

DU does not concur with this finding.

“Duke used the provisional indirect cost rates in effect as of the date grants were awarded throughout the life of the awards, rather than adjusting the rates it applied to those awards after its indirect cost rates were negotiated and approved by its cognizant agency.”

- DU maintains that it applied the correct Facilities & Administration (F&A) rate per Federal regulations. The Auditors cite regulatory excerpts [2 CFR 220, Appendix A, Section G.7.b. and 2 CFR 200, Appendix III, Section C.6] that require an adjustment from a provisional F&A rate to an approved F&A rate; these excerpts, however, are specific to “when an educational institution does not have a negotiated rate with the Federal Government at the time of an award (because the educational institution is a new recipient or the parties cannot reach agreement on a rate).” However, the more on-point regulatory excerpts [2 CFR 220, Appendix A, Section G.7.a. and 2 CFR 200, Appendix III, Section C.7] applicable to grantees that do have approved F&A rates confirm that “if negotiated rate agreements do not extend through the life of the Federal award at the time of the initial award, then the negotiated rate for the last year of the Federal award must be extended through the end of the life of the Federal award.” In 30 of the 32 instances identified by the Auditors, DU applied the correct negotiated rate for each award, extending the last negotiated rate through the end of the life of the award. The remaining two awards were exceptions: for NSF [REDACTED] DU agreed to accept a F&A rate *lower* than DU’s negotiated rate for an award transferring in to the University from another grantee institution, to avoid lowering the award amount available for direct costs required to finish the project; for NSF [REDACTED] DU applied the negotiated “off-campus” F&A rate as required by the approved F&A rate agreement.

Finding 11: Non-Compliance with Duke Policies

DU disagrees, in part, with this finding. The University leverages multiple internal controls to manage and safeguard institutional and Federal funds. These are executed in a manner that is most supportive of the research and in a manner that is as minimally burdensome in process. The Auditors have, in some instances, taken issue with the point in time when DU’s controls were applied, but DU has provided ample evidence in these situations that all elements of the controls were executed before the charge was placed on an NSF award.

**Non-Compliance with Duke Consultant/Independent Contractor Policies**

The Auditors identified three instances in which they concluded the University had not followed its own procurement policies regarding the timing of appropriate documentation when acquiring consulting services. DU does not agree with the Auditors' interpretation of institutional policy. The intent of the referenced policy is to define the institutional internal control environment for procurement activities, and to ensure compliance with all Federal regulations and costing principles. The internal controls were effective in these instances, requiring the completion of all appropriate documents, including review and approval by all required parties, and completion of the suspension and debarment check prior to issuing payment to the vendor. The costs were not allocated to the NSF award until all required actions had been completed.

**Non-Compliance with Duke Subaward Policies**

"Duke did not provide documentation to support that 12 subaward invoices charged to 6 NSF awards were approved by the award's PI."

- DU does not agree with the Auditors' interpretation of institutional policy, which discussed the responsibility of both the PI and the project's grant manager to review subaward invoices. The policy specifically assigns responsibility to grant managers for "oversight and monitoring of subrecipient fiscal matters, including review and approval of invoices with escalation of questionable costs to the PI." The assigned grant managers approved payment of the subaward invoices in each of these instances.

"Duke awarded a subaward to the University [REDACTED] to perform work under NSF Award [REDACTED] before it completed a subrecipient risk assessment."

- DU maintains that this was an allowable business process under the previous version of the University's subrecipient management policy in effect in 2015, when this subaward was issued. At that time, the pre-award offices had primary responsibility for completing subrecipient risk assessments, and their business process allowed for the issuance of a subaward agreement without an individually documented risk assessment under specific circumstances. This subaward was issued to [REDACTED], to which DU issues an average of [REDACTED] individual subawards each year. [REDACTED] also received 100's of millions of dollars directly from Federal sources in 2015, and was therefore a low risk partner.

**Non-Compliance with Duke Equipment Policies**

"Duke transferred \$63,060 in equipment costs incurred to purchase a specialized laser with non-sponsored funding to NSF Award No. [REDACTED] without OSP [Office of Sponsored Programs] approval."

- DU maintains this does not represent a material deviation from institutional policy. The initial procurement request for this equipment on this NSF award was reviewed by OSP as required; the request was returned as the equipment had not been clearly included in the award budget. A rebudgeting request was subsequently submitted and approved in accordance with the relevant policy, and the cost was subsequently transferred to the NSF award once the University had met applicable sponsor requirements.

"Duke inappropriately capitalized \$30,000 of non-capital expenditures charged to NSF Award No. [REDACTED] for a two-year subscription that allowed Duke to access a library database needed to perform grant related research."

- DU acknowledges the original procurement action was allocated to the NSF award using an accounting code subject to capitalization; the cost was later reclassified to the correct non-capitalized accounting code with no financial impact on the NSF award.

***Non-Compliance with Duke's Effort-Reporting Policy***

"We identified four instances in which employee effort reports were not certified within the timeframe required under Duke's effort reporting policy."

- DU does not agree with the Auditors' interpretation of institutional policy, as the referenced timeframe is not reflected in DU policy, rather it is a management tool used to ensure that all effort reports are appropriately certified by the end of the calendar year.

***Non-Compliance with Duke's Procurement Policies***

"Duke charged NSF Award No. [REDACTED] for \$7,725 in costs incurred to obtain online survey services that were not supported by a documented scope of work for the contract, a term sheet, or an independent contractor checklist; in addition, Duke did not complete the purchase order for these services until after the vendor had provided the services."

- DU does not agree with the Auditors' interpretation of institutional policy. The intent of the referenced policy is to define the institutional internal control environment for procurement activities, and to ensure compliance with all Federal regulations and costing principles. The internal controls were effective in this instance, requiring the completion of all required documents, including review and approval by all required parties, and completion of the suspension and debarment check prior to issuing payment to the vendor. The cost was not allocated to the NSF award until all required actions had been completed. Additionally, an independent contractor checklist was not required by institutional policy, as the vendor was not an individual nor a sole proprietor.

The Auditors identified several instances in which they concluded that the University had not followed its own procurement policies when acquiring goods or services valued at more than \$10,000. DU disagrees that these transactions reflect material deviations from its institutional procurement policies. Two of these transactions involved a vendor that was specifically named in the proposal, thereby obviating the need to compete the acquisition or prepare a sole-source justification. In some instances, the University was perhaps not as timely as it could have been but all required documents, review and approval by all required parties, and completion of the suspension and debarment check were completed prior to issuing payment to the vendor. Two transactions were questioned solely because the competitive analysis was completed via email by the PI and project team rather than through the more formalized procedures used by the procurement team; nonetheless appropriate price analysis was performed. Finally, one transaction the Auditors criticized for not being supported by competitive bidding or a sole-source justification involved a highly specialized [REDACTED] system available only from the research institution that makes the equipment. The NSF Biological and Chemical Oceanography Data Management Office's published research instrument database further reflects the unique nature and sourcing of the equipment at issue and supports the University's decision to purchase the sampling system without a formal sole-source justification.

**Non-Compliance with Duke Purchasing Card Policies**

"Duke requested an expense incurred to host a reception at an NSF Award No. [REDACTED] sponsored conference be split into multiple purchases under \$2,000 to adhere to credit card transaction limits."

- DU maintains this does not represent a material deviation from institutional policy. The hotel vendor providing the service would not issue a payable invoice or accept a check for their services. However, this restriction was not communicated to the project coordinator in advance. At the time of the event, the project coordinator did not have the ability to request an increase to their credit card transaction limit, which would be the recommended business process. Therefore, before the costs were allocated to the NSF award, the transactions were fully reviewed according to institutional policy, including by the grant manager and the institutional finance team.

"Duke did not provide support that it approved an increased purchasing limit for the PI of NSF Award No. [REDACTED] to purchase airfare that exceeded the \$3,000 purchasing card limit."

- DU maintains that all requested support for this transaction was provided to the Auditors. This credit limit increase was requested by the local department for this card holder and approved by the institutional card office, as required by institutional policy and documented via email exchange prior to the transaction.

"Duke did not post purchase card expenses to NSF awards (NSF Award Nos. [REDACTED] and [REDACTED] within 30 days of the purchase card transaction date."

- DU maintains this does not represent a material deviation from institutional guidance, which is designed to support the timely posting of purchasing card transactions. The University's internal controls based on review and approval of these transactions ensure that an unapproved purchasing card transaction is not reimbursed by a Federal sponsor. The actual number of elapsed days outside of the institutional guidance timeframe before the transaction's approval were 32, 45 and 48 respectively.

**Non-Compliance with Duke Service Center Policies**

"Chemical analyses services provided by Duke's [REDACTED] ([REDACTED] were billed to NSF Award No. [REDACTED] using rates that were not supported by the [REDACTED] rate sheet."

- DU does not agree with the facts as presented. The rate sheet provided to the Auditors for this transaction included an addendum sheet that confirmed the rate could be *lower* if project staff participated in running the sample analysis, which was the case in this instance.

As noted earlier in its response, Duke University greatly appreciates the opportunity to partner with NSF on this audit. Although the draft Audit Report contains a number of Cotton & Company findings, these do not represent systemic flaws in the University's award management processes. That said, the Auditors have highlighted some opportunities for DU to further enhance its research administration policies and it will do so.

This draft audit report covers the time period from October 2015 thru September 2018. In the intervening years, the University has implemented numerous policy and system improvements to strengthen its award management and administration. These include, but are not limited to, a comprehensive review and update of all procurement policies for sponsored projects; a revised format for sole-source justification requests, aligned with the requirements listed in 2 CFR 200; development and delivery of training sessions and guidance materials related to compliant procurement practices for research administrators and others involved in the management of sponsored project activity; republication of an employee handbook with enhanced content regarding research integrity and compliance management; introduction of a dedicated web-based access point for research administrators to obtain answers to costing and other compliance questions; implementation of an integrated knowledge base portal to provide one-stop support for training, event, policy and training resources; and institution-wide implementation of an electronic attestation for Federal award applications that further promotes a culture of accountability and compliance.

Duke University is committed to compliance and as a learning institution it will continue to improve its research accounting and administrative practices to foster that commitment.

Respectfully submitted,



Nate Martinez-Wayman  
Senior Director, Post Award Administration

## **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 Duke incurred on NSF awards for the period from October 1, 2015, to September 30, 2018. The objective of the audit was to determine if costs claimed by Duke 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 Duke and NSF OIG. NSF OIG provided award data that Duke reported through NSF’s Award Cash Management Service (ACMS) during our audit period. Duke claimed more than \$119 million on 526 NSF awards through ACMS during our audit period. Duke provided detailed transaction-level data to support \$117.8 million in costs charged to NSF awards during the period. Duke was able to justify the population variances identified, which resulted in a total audit universe of \$117,799,913 in costs claimed on 518 NSF awards.

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

Based on our assessment, we found Duke’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 FYs 2015 through 2019 found no reportable instances in which NSF’s financial management systems did not substantially comply with applicable requirements.

Duke 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 Duke’s internal controls solely to understand the policies and procedures relevant to the financial reporting and administration of NSF awards to evaluate Duke’s compliance with laws, regulations, and award terms applicable to the items selected for testing, but not to express an opinion on the effectiveness of Duke’s internal controls over award financial reporting and administration. Accordingly, we do not express an opinion on the effectiveness of Duke’s internal controls 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 Duke’s system that warranted focus during our testing.

We began our analytics process by reviewing the transaction-level data that Duke provided and used 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 also performed a site visit to gain an understanding of the reviewed policies and procedures. The site visit included holding interviews and walkthroughs to discuss payroll, fringe benefits, effort reporting, travel authorization and reimbursement, participant support costs, procurement, equipment, other direct costs (e.g., patent costs, relocation, advertising), grant closeout procedures, subawards, ACM\$ processing, indirect costs, general policies (e.g., pre-award costs, post-award costs, whistleblowers), and Graduate Research Fellowship Program expenses. These interviews and walkthroughs furthered our understanding of the policies and procedures while we tested the sampled transactions.

We identified 275 transactions for testing and performed non-transaction-based cluster testing in two areas to evaluate whether Duke appropriately charged supplemental and administrative salary costs to NSF awards during the audit. To determine the allowability of the costs reviewed during our audit, we requested and reviewed supporting documentation from Duke to determine if we had obtained sufficient, appropriate evidence to support the allowability of the selected expenditures. When necessary, we requested and reviewed additional supporting documentation and obtained explanations and justifications from PIs and other knowledgeable Duke personnel until we had sufficient support to assess the allowability, allocability, and reasonableness of each transaction.

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 Duke 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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