

Performance Audit of Incurred Costs – University of North Carolina, Chapel Hill

REPORT PREPARED BY COTTON & COMPANY LLP

NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL

July 13, 2020
OIG 20-1-004





AT A GLANCE

Performance Audit of Incurred Costs – University of North Carolina, Chapel Hill
Report No. OIG 20-1-004
July 13, 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 the University of North Carolina, Chapel Hill (UNC) for the period October 1, 2015, to September 30, 2018. The auditors tested more than \$7 million of the approximately \$121.8 million of costs claimed to NSF. The objective of the audit was to determine if costs claimed by UNC 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 UNC's compliance with certain Federal and NSF regulations, and, UNC policies when allocating expenses to NSF awards. The auditors questioned \$744,671 of direct and indirect costs claimed by UNC during the audit period. Specifically, the auditors found \$175,413 of inadequately supported expenses, \$164,313 of unapproved subaward expenses, \$103,250 of unsupported Award Cash Management System (ACMS) draws, \$88,001 of inappropriately allocated expenses, \$86,607 of expressly unallowable expenses, \$65,314 of inappropriately applied indirect costs, \$35,578 of inappropriately procured goods and services, \$17,136 of unallowable costs associated with accounting issues, and \$9,059 of inappropriately treated expenses as a result of non-compliance with NSF award terms and conditions. The auditors also identified three compliance-related findings for which there were no questioned costs; FY 2015 effort not appropriately certified, incorrect application of proposed indirect cost rates, and non-compliance with UNC 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 12 findings in the report with associated recommendations for NSF to ensure UNC credits or repays the questioned costs and to ensure UNC strengthens administrative and management controls.

AUDITEE RESPONSE

UNC expressed varying levels of agreement and disagreement with the findings throughout the report. UNC's response is attached in its entirety to the report as Appendix B.

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



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

MEMORANDUM

DATE: July 13, 2020

TO: Dale Bell
Director
Division of Institution and Award Support

Jamie French
Director
Division of Grants and Agreements

FROM: Mark Bell
Assistant Inspector General
Office of Audits



SUBJECT: Audit Report No. 20-1-004, University of North Carolina, Chapel Hill

This memo transmits the Cotton & Company LLP (C&C) report for the audit of costs charged by the University of North Carolina, Chapel Hill (UNC) 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 \$7 million of the approximately \$121.8 million of costs claimed to NSF during the period. The objective of the audit was to determine if costs claimed by UNC 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.

Attachment

cc:

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UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL

**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

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**NATIONAL SCIENCE FOUNDATION
PERFORMANCE AUDIT OF INCURRED COSTS
UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL**

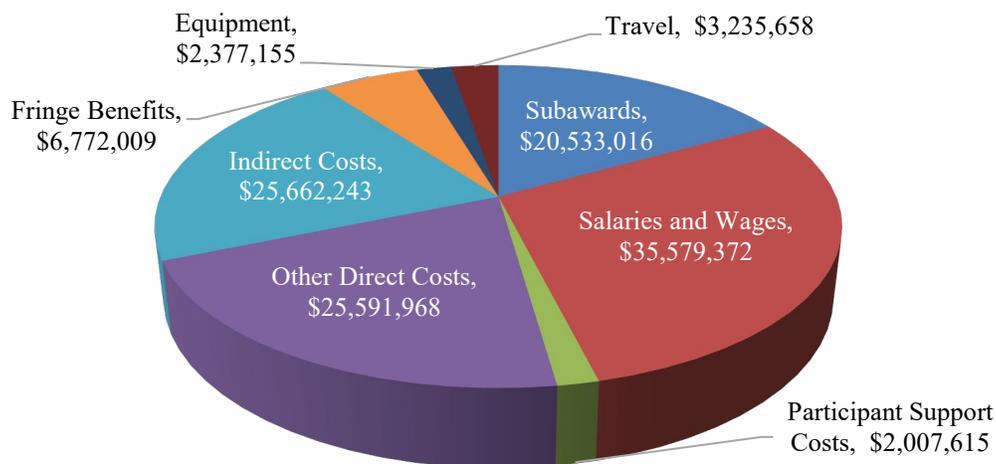
I. BACKGROUND

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 the University of North Carolina, Chapel Hill (UNC). UNC is a public research university that reported \$614 million in sponsored research funding from Federal sources in fiscal year 2018. As illustrated in Figure 1, UNC’s general ledger supported more than \$121 million in expenses claimed on 456 NSF awards during our audit period of performance (POP), or October 1, 2015, to September 30, 2018. Figure 1 also shows costs claimed by budget category based on the accounting data that UNC provided.

Figure 1. Costs Claimed by NSF Budget Category, October 1, 2015, through September 30, 2018



Source: Auditor analysis of accounting data provided by UNC.

This performance audit, conducted under Order No. 140D0418F0493, was designed to meet the objectives identified in the Objectives, Scope, and Methodology (OSM) section of this report (Appendix C) and was conducted in accordance with *Generally Accepted Government Auditing Standards* (GAGAS), issued by the U.S. Government Accountability Office. We communicated the results of our audit and the related findings and recommendations to UNC and NSF OIG. We have included UNC's response to this report in its entirety in Appendix B.

II. AUDIT RESULTS

We tested 250 transactions, which represented \$7,011,548 in costs that UNC claimed during the audit period. Based on the results of our testing, we determined that UNC 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 and NSF regulations and UNC policies.

As a result, we identified and questioned \$744,671 of direct and indirect costs that UNC inappropriately claimed during the audit period:

- \$175,413 of inadequately supported expenses.
- \$164,313 of unapproved subaward expenses.
- \$103,250 of unsupported Award Cash Management Service (ACMS) draws.
- \$88,001 of inappropriately allocated expenses.
- \$86,607 of expressly unallowable expenses.
- \$65,314 of inappropriately applied indirect costs.
- \$35,578 of inappropriately procured goods and services.
- \$17,136 of unallowable costs associated with accounting issues.
- \$9,059 of inappropriately treated expenses as a result of non-compliance with NSF award terms and conditions.

We also identified three compliance-related findings for which there were no questioned costs:

- FY 2015 effort not appropriately certified.
- Incorrect application of proposed indirect cost rates.
- Non-compliance with UNC policies.

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

Finding 1: Inadequately Supported Expenses

UNC did not provide adequate documentation to support the allocability, allowability, and reasonableness of \$175,413 in expenses charged to 13 NSF awards during the audit period, as

required by relevant Federal regulations¹ and NSF *Proposal and Award Policies and Procedures Guides* (PAPPGs).²

Inadequately Supported Travel Costs

UNC did not provide sufficient documentation to support the allowability of \$103,373 in travel costs charged to four NSF awards. Specifically:

- In September 2014, UNC charged NSF Award No. [REDACTED] for \$3,272 in travel costs that the Principal Investigator (PI) incurred to conduct grant-related fieldwork in [REDACTED]. Although the PI's travel advance reconciliation agreed with the amount claimed, UNC did not provide receipts or any other form of documentation to support the allowability of \$1,161 of the claimed flight insurance expenses.
 - *UNC agreed to reimburse NSF for these expenses.*
- In August 2015, UNC charged NSF Award No. [REDACTED] for \$18,900 in travel costs that the PI incurred to conduct grant-related research. Although the PI's travel advance reconciliation agreed with the amount claimed, UNC did not provide sufficient documentation to support the allowability of \$2,536 of the claimed expenses, including:
 - \$1,701 claimed for a round-trip flight between [REDACTED] and [REDACTED]. UNC provided an invoice to support this charge; however, the invoice did not identify either the airline or the class of airfare purchased.³
 - *UNC agreed to reimburse NSF for this expense.*
 - \$504 claimed for an honorarium payment. UNC provided only a hand-written note from the PI, which was signed by an individual who was not identified as a

¹ According to 2 Code of Federal Regulations (CFR) Part 220, Appendix A, Section C.4.a and 2 CFR §200.405(a), organizations should allocate costs to a particular cost objective in accordance with the relative benefits received. Moreover, per 2 CFR §215.21(b)(7), recipients' financial management systems must include cost accounting records that are supported by source documentation. In addition, per 2 CFR §200.403(g), organizations must adequately document costs for the costs to be allowable under Federal awards.

² NSF PAPPGs 11-1 and 13-1, 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 program solicitation. 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. 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.

³ Without being able to identify the airline or the class of airfare purchased, we were unable to verify that the expense complied with 2 CFR 220, Appendix A, Section J.53.c.(1), which requires organizations to meet certain criteria before they may incur airfare in excess of the customary standard commercial airfare. Moreover, NSF PAPPG 13-1, Part II, Chapter VI, Section G.1.b.(i) states that travelers must comply with the *Fly America Act*, which requires travelers to use U.S. flag carriers if they are traveling using funds provided by NSF.

grant participant, as support that the honorarium payment was provided to this individual for giving a presentation.

- *UNC agreed to reimburse NSF for this expense.*
- \$331 claimed for an insurance payment. UNC provided a receipt to support this charge; however, the receipt did not identify either the type of coverage or the recipient of the coverage.
 - *UNC agreed to reimburse NSF for this expense.*
- Between September 2015 and August 2016, UNC charged NSF Award Nos. [REDACTED] and [REDACTED] for \$25,000 each in participant support costs (PSCs), for a total of \$50,000. UNC paid the PSCs in response to an invoice from [REDACTED], an association that organized grant-related conferences in Washington, D.C., and Austin, Texas. UNC provided two invoices that included \$50,000 in costs that [REDACTED] billed for conference-related expenses; however, it did not provide documentation to support the allowability of \$27,395 of the billed expenses, including:
 - \$10,600 charged to NSF Award No. [REDACTED] for travel stipends awarded to 40 conference participants. [REDACTED] invoice identified the amount of the travel stipend provided to each participant; however, these stipends ranged from \$0 to \$800, and [REDACTED] did not provide any documentation to support that the amount of each stipend was appropriate or reasonable.⁴
 - \$1,200 charged to NSF Award No. [REDACTED] for conference-related expenses that were not included in the itemized list of expenses that [REDACTED] provided with its invoice.⁵
 - *UNC agreed to reimburse NSF for these expenses.*
 - \$15,595 charged to NSF Award No. [REDACTED] for travel stipends awarded to 19 conference participants. [REDACTED] invoice identified the amount of the travel stipend provided to each participant; however, these stipends ranged from \$300 to

⁴ The [REDACTED] grant report stated that the amount offered to each student “depends on how far a student will need to travel and the amount they request.” However, [REDACTED] was unable to provide travel stipend requests to support the amount of the travel stipends awarded, and the stipends did not always appear to be appropriate based on the distance the participant needed to travel. For example, [REDACTED] provided a \$700 travel stipend to a student at [REDACTED] University, which is located in Washington, D.C., to enable the student to travel to the Washington, D.C. conference. Meanwhile, many participants attending the conference from the West Coast only received \$300 travel stipends.

⁵ The front page of the invoice requested \$25,000 in conference-related expenses; however, the itemized list that [REDACTED] provided to support the invoice only included \$23,800 in conference-related expenses.

\$1,000, and ██████ did not provide any documentation to support that the travel stipend amounts were appropriate or reasonable.⁶

- Between February and June 2018, UNC charged NSF Award No. ██████ for \$72,281 in fieldwork costs invoiced by the ██████ in ██████. ██████ and UNC co-manage the ██████ where UNC performed grant-related fieldwork. UNC was able to provide itemized invoices from ██████ to support the amount of the expenses; however, UNC did not provide sufficient documentation to support the allowability of the expenses.
 - ██████ invoices included expenses such as student airfare, student per diem, and student housing; however, when we requested receipts to support the amounts of the expenses, ██████ only provided an Excel document and a series of receipts that (i) did not reconcile to the itemized amounts invoiced, and (ii) did not support the full amount of the expenses that ██████ had invoiced UNC.

Inadequately Supported External Service Expenses

UNC did not provide sufficient documentation to support the allowability of \$37,548 in service expenses charged to an NSF award. Specifically:

- Between June 2015 and August 2016, UNC charged NSF Award No. ██████ for \$37,548 in expenses invoiced by the ██████. UNC provided invoices from ██████ to support the amounts charged; however, because UNC did not enter into a contractual agreement with ██████ for the invoiced services, we were unable to verify the allowability of these expenses.
 - Specifically, because UNC and ██████ did not establish a contract to support the type(s) of services that ██████ would provide or the type(s) of direct costs that ██████ would charge UNC for the use of a telescope to perform grant-related activities, we were unable to verify whether the costs that ██████ invoiced were allocable, reasonable, or allowable on this award. These costs included items such as shipping costs, “██████ F&A” fees, “General & Administrative” fees, gasoline fees, labor expenses, meals and lodging costs, electric service expenses, shuttle transportation costs, insurance expenses, and “██████ Services.”

Inadequately Supported Internal Service Center Costs

⁶ The ██████ grant report stated that the amount offered to each student “depends on how far a student will need to travel and the amount they request.” However, ██████ was unable to provide travel stipend requests to support the amount of the travel stipends awarded, and the stipends did not always appear to be appropriate based on the distance the participant needed to travel. For example, ██████ provided a \$700 travel stipend to both a participant attending the conference from ██████ Texas, and a participant attending the conference from ██████ Massachusetts. We also noted that participants traveling from different schools within the same city received different stipend amounts.

UNC did not provide sufficient documentation to support the allowability of \$19,356 in internal service center costs^{7, 8} charged to five NSF awards. Specifically:

- In May 2015, UNC charged NSF Award No. [REDACTED] for \$1,876 in material and labor costs invoiced by UNC's Physics Department Instrument Shop (PDIS). UNC provided a receipt to support the charge; however, the receipt included \$160 in material costs that UNC did not support.⁹
 - *UNC agreed to reimburse NSF for these expenses.*
- In December 2015, UNC charged NSF Award No. [REDACTED] for \$8,763 in direct computer equipment expenses invoiced by UNC's Information Technology Services (ITS) department. UNC provided an invoice to support the charge; however, it did not provide receipts to support the actual cost of the equipment that ITS purchased or the allowability of the billing rate used.
 - Because we questioned all the indirect costs applied to this transaction in Finding 6, we are only questioning the direct costs in this finding.
 - *UNC agreed to reimburse NSF for these expenses.*
- In February 2016, UNC charged NSF Award No. [REDACTED] for \$3,398 in material costs invoiced by PDIS. UNC provided an invoice from PDIS to support the charge; however, it did not provide receipts to support \$1,371 of the invoiced costs.
 - *UNC agreed to reimburse NSF for these expenses.*
- In December 2017, UNC charged NSF Award No. [REDACTED] for \$8,283 in labor costs invoiced by UNC's High-Throughput Sequencing Facility (HTSF). UNC provided an invoice from HTSF to support the charge; however, it did not provide either a log to support the 147 hours billed or an HTSF Rate Sheet to support the direct labor and fringe benefit rates used to calculate the total amount charged.
 - *UNC agreed to reimburse NSF for these expenses.*

⁷ UNC Policy 900.1, *Research Service Centers*, states that all service center rates must be allowable under Federal and University guidelines and that, in order to be charged directly, the rates must be beneficial and easily attributable with a high degree of accuracy. Moreover, the rates used must be documented and submitted to the Office of Sponsored Research's (OSR's) Cost Analysis and Compliance department. Further, 2 CFR 220, Appendix A, Section J.47.b. and §200.468 state that specialized service facility costs must be charged directly based on actual usage of the services on the basis of a schedule of rates or established methodology that does not discriminate between activities under Federal awards and is designed to recover only the aggregate costs of the services.

⁸ According to 2 CFR 220, Appendix A, Section J.31.b. and 2 CFR 200.453, purchased materials and supplies must be charged at their actual prices, net of applicable credits, and withdrawals from general stores or stockrooms must be charged at their actual net cost under any recognized method of pricing inventory for withdrawals, consistently applied.

⁹ UNC stated that it was unable to provide receipts to support these material costs because the amounts invoiced were not based on actual costs, but on "the current market rate for that time period." UNC was unable to provide documentation to support the "current market rate" used.

- In July 2018, UNC charged NSF Award No. [REDACTED] for \$5,467 in computer service fees invoiced by UNC’s Biostatistics Computer Services Recharge (BCSR) Center. UNC provided an invoice from BCSR to support the charge; however, UNC did not support that \$779 of the fees invoiced were allowable under this award.¹⁰
 - *UNC agreed to reimburse NSF for these expenses.*

Inadequately Supported Salary Costs

UNC did not provide sufficient documentation to support the allowability of \$11,116 in salary expenses¹¹ charged to an NSF award. Specifically:

- In August 2017, UNC charged NSF Award No. [REDACTED] for \$11,116 in salary and fringe benefits associated with a lump-sum payment made to a graduate research assistant (GRA). The GRA certified that 100 percent of [REDACTED] effort was allocable to this award; however, UNC did not support either the hourly rate or the number of hours that it used when calculating the amount of the lump-sum payment.¹²
 - *UNC agreed to reimburse NSF for these expenses.*

Inadequately Supported Other Direct Costs

UNC did not provide sufficient documentation to support the allowability of \$4,020 in other direct cost expenses charged to three NSF awards. Specifically:

- In July 2016, UNC charged NSF Award No. [REDACTED] for \$1,520 in costs invoiced to reload OligoCards. OligoCards are prepaid cards purchased from Integrated DNA Technologies. UNC claimed that it used the funds added to the OligoCards to buy DNA oligonucleotide primers for use in grant-related research; however, because UNC personnel could have used these cards to purchase any Integrated DNA Technologies products, the “OligoCard refill” receipt that UNC provided does not support that the item(s) ultimately purchased with the prepaid cards were allocable and allowable under this award.
 - *UNC agreed to reimburse NSF for these expenses.*
- In March 2017, UNC charged NSF Award No. [REDACTED] for \$2,500 in costs incurred to purchase 500 Amazon gift cards of \$5 each. UNC provided a “Reconciliation of Cash Advance” form to support this charge; however, it did not reconcile the individual gift

¹⁰ In response to our audit request, UNC recalculated the amount of the service fee that was allocable to this award. Based on this recalculation, UNC was only able to support \$4,686 of the expense.

¹¹ According to 2 CFR 220, Appendix A, Section J.10.b.(1)(a) and 2 CFR §200.430, charges for salaries and wages must be based on the payroll documented in accordance with the practices of the university. Moreover, salaries and wages charged to Federal awards must be based on records that accurately reflect the work performed.

¹² UNC stated that there was no agreed-upon salary for the work performed by this GRA, as the “payment was made under a Secondary job with an 0.10 FTE, which pays only on the hours worked.”

card disbursements when preparing the form. Instead, UNC recorded the distribution of two sets of 250 gift cards: 250 gift cards for participants “251-501” and 250 gift cards for participants “502-752.” Further, when UNC’s Sponsored Programs Office (SPO) requested a log to support the disbursement of the gift cards in response to our audit request, the Excel document provided was not sufficient to support the actual distribution of the gift cards.¹³

- o *UNC agreed to reimburse NSF for these expenses.*

UNC did not have sufficient policies and procedures in place to ensure that it requested and maintained sufficient documentation to support the allowability of the direct costs that it charged to Federal awards. Without sufficient documentation, we were unable to verify that costs charged to NSF awards are reasonable for, allocable to, and allowable under the awards charged. As a result, we are questioning \$175,413 charged to 13 NSF awards. As illustrated in Table 1, UNC concurred with \$39,389 of the questioned costs and disagreed with \$136,024.

Table 1. Inadequately Supported Expenses

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			UNC Agreed to Reimburse
			Direct	Indirect	Total	
September 2014 Flight Insurance	██████	2015	\$921	\$240	\$1,161	\$1,161
August 2015 Travel Advance	██████	2016	2,013	523	2,536	2,536
September 2015 Conference Expenses	██████	2016	11,800	0	11,800	1,200
August 2016 Conference Expenses	██████	2017	15,595	0	15,595	0
February – June 2018 ██████ Travel Expenses	██████	2018	57,366	14,915	72,281	0
June 2015 – August 2016 ██████ Services	██████	2015 – 2017	31,308	6,240	37,548	0
May 2015 PDIS Materials	██████	2015	108	52	160	160
December 2015 ITS Equipment	██████	2016	8,763	0	8,763	8,763
February 2016 PDIS Materials	██████	2016	1,371	0	1,371	1,371
December 2017 HTSF Costs	██████	2018	6,574	1,709	8,283	8,283
July 2018 BCSR Costs	██████	2019	513	266	779	779

¹³ The Excel file that UNC provided to support the distribution of the 500 gift cards contained 827 line items, none of which included participant numbers or disbursement dates. These line items did not reconcile to the 500 gift cards tested and included a variety of inconsistencies and errors, including 152 records with duplicate gift card numbers, 83 records that stated “?” in the Survey ID cell, 84 records that stated “?” in the gift card number cell, and 46 records that did not include a city, state, zip code, or census block group.

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			
			Direct	Indirect	Total	UNC Agreed to Reimburse
August 2017 GRA Labor	██████████	2018	7,313	3,803	11,116	11,116
August 2016 Prepaid Cards	██████████	2017	1,000	520	1,520	1,520
March 2017 Gift Cards	██████████	2017	2,500	0	2,500	2,500
		Total	<u>\$147,145</u>	<u>\$28,268</u>	<u>\$175,413</u>	<u>\$39,389</u>

Source: Auditor summary of questioned transactions.

Recommendations

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

1. Resolve the \$136,024 in questioned conference, travel, and ██████████ service costs and direct UNC to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UNC to provide support verifying that it has repaid or otherwise credited the \$39,389 of questioned equipment, internal service center, salary, and other direct costs for which it has agreed to reimburse NSF.
3. Direct UNC to strengthen its policies and procedures related to the creation and retention of documentation, including introducing additional controls to help ensure that UNC appropriately creates and maintains all documentation necessary to support the allowability of expenses charged to sponsored programs.
4. Direct UNC to strengthen its administrative and management processes and procedures surrounding the approval of travel expense reports. Updated procedures could include:
 - a. Conducting annual training for those individuals responsible for reviewing and approving each department’s expense reports.
 - b. Updating UNC’s travel policies and procedures to specifically identify the level of documentation that travelers must provide to support airfare expenses.
 - c. Establishing clear guidance regarding what types of expenses personnel may pay in cash while conducting on-site fieldwork and how to document those payments.
5. Direct UNC to strengthen its administrative and management processes and procedures surrounding the approval of vendor and service provider invoices. Updated procedures could include:

- a. Updating UNC’s invoice approval process to require that the approver verify that costs invoiced by the vendor or service provider are consistent with the costs outlined in the vendor/service agreement.
 - b. Requiring organizations that invoice UNC for conference travel expenses to provide original receipts that support the allowability of the travel expenses and/or justifications to support how the organization established the travel stipend award amounts.
6. Direct UNC to strengthen its administrative and management processes and procedures surrounding the internal service center billing process. Updated procedures could include:
- a. Conducting annual training for those individuals responsible for billing internal service expenses within each center.
 - b. Developing standard billing processes for each center that establish how the center will bill direct material expenses to UNC departments and external users.
 - c. Performing periodic reviews of internal service center invoices to ensure that the centers are billing departments appropriately, using the rate(s) established for each center.
7. Direct UNC to strengthen its administrative and management processes and procedures surrounding the reconciliation and tracking of gift cards or other prepaid cards. Updated procedures could include:
- a. Establishing a standard document for tracking the disbursement of gift cards.
 - b. Updating its policies and procedures to require that departments maintain gift card disbursement logs to support all gift card expenses claimed on cash advance reconciliations.
 - c. Requiring that employees keep itemized receipts for all expenses paid using prepaid cards.

University of North Carolina Response: UNC agreed with the findings related to inadequately supported expenses claimed for travel on NSF Award No. [REDACTED], internal service center costs, salary payments, and other direct costs.¹⁴ In addition, although UNC did not agree with the finding related to NSF Award No. [REDACTED], it has agreed to reimburse \$1,200 of the costs questioned in that finding. UNC disagreed with the remaining findings. Specifically:

- With regard to the \$10,600 and \$15,595 in questioned travel costs charged to NSF Award Nos. [REDACTED] and [REDACTED], respectively, UNC stated that it was not required to maintain

¹⁴ UNC’s formal response letter indicated that it accepted these findings; however, the exhibit that UNC attached to its letter indicated that UNC “reserves the right to discuss” \$6,007 of the costs questioned related to inadequately supported expenses charged to NSF Award Nos. [REDACTED], [REDACTED], [REDACTED], and [REDACTED].

detailed documentation for specific expenses because the payments represented participant support stipends based on amounts approved by NSF.

- With regard to the \$72,281 in questioned travel costs charged to NSF Award No. [REDACTED], UNC stated that because it was able to provide receipts to support \$44,787 of the questioned expenses, it believes these costs should be allowable.
- With regard to the \$37,548 in questioned external service costs charged to NSF Award No. [REDACTED], UNC stated that, although the contract between UNC and [REDACTED] had expired before [REDACTED] provided the service, the parties had continued their contractual relationship under an “implied in fact” contract. UNC considers [REDACTED] to have provided the services under a legally binding contract and believes that these services were necessary to achieve the objectives of the award. As a result, it believes that the costs should be allowable.

Auditors’ Additional Comments: Our position regarding this finding has not changed. Specifically:

- With regard to the \$10,600 and \$15,595 in questioned travel costs charged to NSF Award Nos. [REDACTED] and [REDACTED], respectively, UNC stated that it was not required to maintain detailed receipts. However, because [REDACTED] appears to have considered actual travel costs when determining the amount of each student’s stipend, our conclusion regarding this finding has not changed. Specifically, UNC stated that the amount of the stipend was based on the distance the student was required to travel, rather than on the actual costs incurred. However, because [REDACTED] provided travelers from similar locations with different stipend amounts, this response does not appear to be reasonable or supported by the documentation that UNC provided. For example:
 - Students who attended the NSF Award No. [REDACTED]-related conference held in Washington, D.C. received travel stipends in varying amounts that did not appear to relate to the distance the students were required to travel, as follows:
 - Of the four [REDACTED] University students who attended the conference, three received \$300 stipends and one received a \$700 stipend.
 - A student from [REDACTED] University, which is located in Washington, D.C., received a \$700 stipend.
 - UNC awarded \$700 stipends to multiple individuals traveling from locations on the East Coast, such as New York, New Jersey, and Pennsylvania, which were relatively close to the conference location. However, UNC only awarded \$300 stipends to multiple individuals traveling from locations in the Midwest and the West Coast, such as California, Washington, and Wisconsin, which were relatively far from the conference location.

- With regard to the \$72,281 in questioned travel costs charged to NSF Award No. [REDACTED], the receipts that UNC provided to support \$44,787 of the questioned costs did not reconcile to the itemized amounts invoiced by the vendor. We were therefore unable to verify that these receipts actually related to the questioned costs. We also noted that the receipts provided did not always adequately support that the costs invoiced were reasonable or allowable. For example:
 - The receipts provided to support \$25,900 in marine transport costs were supported only by hand-written invoices for 7 days of transportation on a wooden skiff.
 - The receipts provided to support \$5,499 in airfare costs did not contain enough detail to support that the tickets related to economy-class flights that complied with the *Fly America Act*.
 - The receipts provided to support \$1,001 in lodging costs did not contain enough detail to support the date(s) or location(s) of the lodging.
- With regard to the \$37,548 in questioned external service costs charged to NSF Award No. [REDACTED], UNC stated that costs should be allowable because they were necessary to achieve award objectives and took place under an “implied in fact” contract; however, [REDACTED] ultimately did not invoice the costs under a contract to provide services related to this award. Without an effective written contract that provides ample detail regarding the scope of work and anticipated charges and agreed-upon amounts, UNC does not have adequate support for the amount charged to the NSF award; and as such, our conclusion regarding this finding has not changed. Specifically, because we were unable to verify that [REDACTED] invoiced the costs, which included shipping costs, an “[REDACTED] F&A Fee,” a “General & Administrative Fee,” and gasoline expenses, in accordance with a contract that outlined the type(s) of services to be provided and the amount that UNC agreed to pay for the services, we were unable to determine whether the costs invoiced were reasonable for, allocable to, or allowable under this award.

Finding 2: NSF Approval Not Obtained Before Transferring Award Research to Other Organizations

UNC did not obtain NSF’s approval before issuing \$164,313 of subawards to two organizations to allow co-PIs to continue performing grant-related research after leaving UNC. Specifically, although UNC’s annual reports to NSF did indicate that the co-PIs were performing work at subawardee institutions, UNC did not formally request approval to contract or transfer a significant amount of the research or effort under the award to other organizations, either within

the original grant proposal or through subsequent requests submitted to NSF¹⁵ via the NSF FastLane System¹⁶ as required by NSF policies.

- UNC awarded \$99,911, or 20 percent of NSF Award No. [REDACTED]'s 5-year budget, to the University [REDACTED] to allow the award's co-PI to continue conducting and coordinating grant-related research after transferring to [REDACTED]. [REDACTED] invoiced the entire \$99,911 during the subaward's 2-year POP (43 percent of the NSF award's POP).
- UNC awarded \$39,402, or 19 percent of NSF Award No. [REDACTED]'s 3.5-year budget, to the [REDACTED] University [REDACTED] to allow the award's co-PI to continue conducting and coordinating grant-related research after transferring to [REDACTED]. [REDACTED] invoiced the entire \$39,402 during the subaward's 1.5-year POP (46 percent of the NSF award's POP).

UNC did not have sufficient policies or procedures in place to ensure that it always obtained authorization from appropriate NSF personnel before transferring a significant amount of the research funded by NSF to other organizations. Specifically, UNC did not have appropriate procedures in place to ensure that subaward requests were formally processed within NSF's FastLane System and inappropriately relied on other forms of communication with NSF¹⁷ to support NSF approval of the subaward. Because UNC did not receive authorization to enter into these subaward agreements, we are questioning the \$164,313 of direct and indirect costs charged to NSF for these two subawards. As illustrated in Table 2, UNC disagreed with our conclusion for all questioned costs.

Table 2. NSF Approval Not Obtained Before Transferring Award Research

Description	NSF Award No.	Questioned Costs		
		Direct	Indirect	Total
[REDACTED] Subaward	[REDACTED]	\$99,911	\$12,000	\$111,911
[REDACTED] Subaward	[REDACTED]	39,402	13,000	52,402
	Total	<u>\$139,313</u>	<u>\$25,000</u>	<u>\$164,313</u>

Source: Auditor summary of questioned transactions.

¹⁵ NSF PAPPGs 11-1, 13-1, and 14-1, Part II, Chapter II, Section B.3 state that the intent to enter into a subaward agreement should be disclosed in the proposal submission, and that if it becomes necessary to contract or otherwise transfer a significant part of the research or substantive effort after a grant has been made, the grantee shall electronically submit, at a minimum, (i) a clear description of the work to be performed, (ii) the basis for selection of the subawardee, and (iii) a separate budget for each subaward, and NSF will indicate its authorization by an amendment to the grant signed by the Grants and Agreements Officer. Further, NSF's June 1, 2011, Research Terms and Conditions, Section 25(b)(4) states that a recipient must submit a justification, a description of the scientific/technical impact on the project, and a budget estimate to the cognizant Federal awarding agency official when requesting approval to transfer a significant part of an award's research, unless described in the approved application or approved modifications to the award.

¹⁶ NSF PAPPGs 11-1, 13-1, and 14-1, Part II, Chapter II, Section A.2.b. state that all notifications and requests contained in Award & Administration Guide (AAG) Exhibit II-1, which includes the contracting or transferring of project effort, must be submitted electronically via the NSF FastLane System.

¹⁷ As support that NSF was aware of the subawards issued on these awards, UNC provided (a) a "Change in PI" request submitted for NSF Award No. [REDACTED] that indicated that the original PI for the award was moving to [REDACTED] and that UNC intended to issue a subaward to [REDACTED] and (b) annual progress reports submitted for NSF Award No. [REDACTED] that identified the co-PI as an award collaborator at [REDACTED].

Recommendations

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

1. Resolve the \$164,313 in questioned subaward costs and direct UNC to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UNC to strengthen the administrative and management controls and processes over transferring significant parts of federally funded research to other organizations. Processes could include:
 - a. Establishing procedures to require that, before issuing a subaward for NSF-sponsored research, UNC verify that the subaward was specifically approved (a) within the NSF grant budget, or (b) through a formal request to transfer a significant amount of the research or effort submitted and approved through NSF's FastLane system, before issuing a subaward.
 - b. Requiring periodic training for PIs and other personnel responsible for entering into subaward agreements.

University of North Carolina Response: UNC disagreed with this finding and the questioned costs. Specifically:

- With regard to the \$111,911 in questioned subaward costs that [REDACTED] invoiced under NSF Award No. [REDACTED], UNC stated that it believes the costs should be allowable because NSF approved a "Change in PI" request form stating that UNC intended to issue a subaward to [REDACTED] to allow the PI to continue to work on the NSF award.
- With regard to the \$52,402 in questioned subaward costs that [REDACTED] invoiced under NSF Award No. [REDACTED], UNC stated that it believes the costs should be allowable because UNC reported its collaboration with the co-PI while [REDACTED] was at [REDACTED] in multiple progress reports submitted to NSF, as well as in the final report for the award.

Auditors' Additional Comments: Our position regarding this finding has not changed. Specifically, although UNC claimed that these costs should be allowable because it notified NSF that collaborators at [REDACTED] and [REDACTED] were performing significant portions of the work, NSF did not formally approve these subawards, as required by the NSF PAPPG. As a result, these costs are not allowable.

Finding 3: Unsupported ACMS\$ Draws

UNC did not always draw down funding in ACMS\$ based on its immediate cash requirements, in accordance with Federal regulations.¹⁸ Specifically, as of the end of our audit period, UNC had drawn down \$103,250 more than the total amount of expenses it had recorded in its general ledger for three NSF awards, as outlined in Table 3.a.

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

Table 3.a. ACMS\$ Draw Discrepancies

NSF Award No.	ACMS\$ Draw Amount	Total Expenses per UNC's General Ledger	Discrepancy
	\$651,775	\$559,939	\$91,836
	506,484	498,539	7,945
	6,439	2,970	3,469
Total			<u>\$103,250</u>

Source: Auditor summary of ACMS\$ draw data provided by NSF OIG and general ledger data provided by UNC.

UNC did not have sufficient policies or procedures in place to ensure that the cash it drew down in ACMS\$ for each NSF award reconciled to the total expenses that UNC had recorded for the award in its accounting system. As a result, we are questioning \$103,250 of costs claimed during the audit period that UNC did not appropriately draw down in ACMS\$. As illustrated in Table 3.b. UNC agreed to reimburse these costs.¹⁹

Table 3.b. Unsupported ACMS\$ Draws

Description	NSF Award No.	Questioned Costs	
		Total	UNC Agreed to Reimburse
Unsupported ACMS\$ Draws		\$91,836	\$91,836
		7,945	7,945
		<u>3,469</u>	<u>3,469</u>
	Total	<u>\$103,250</u>	<u>\$103,250</u>

Source: Auditor summary of questioned transactions.

Recommendations

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

¹⁸ According to 2 CFR 215.22 and 2 CFR §200.305, advance payments must be limited to the minimum amount needed and must be timed to be in accordance with the actual, immediate cash requirements of the entity in carrying out the purpose of the approved program or project. Further, these policies state that payment methods must minimize the time that elapses between the transfer of funds from the United States Treasury or the pass-through entity and the disbursement by the non-Federal entity.

¹⁹ During our audit period, UNC submitted ACMS\$ adjustments to reimburse NSF for the questioned costs related to NSF Award Nos. [redacted] and [redacted] and agreed to reimburse the questioned costs related to NSF Award [redacted].

1. Direct UNC to provide support verifying that it has repaid or otherwise credited the \$103,250 of questioned unsupported ACM\$ cash drawdowns for which it has agreed to reimburse NSF.
2. Direct UNC to strengthen the administrative and management controls and processes over its ACM\$ reconciliation process. Processes could include requiring an individual who is independent from the standard ACM\$ drawdown process to perform periodic reconciliations of ACM\$ cash drawdowns to UNC general ledger expenses for each active NSF award.

University of North Carolina Response: UNC agreed with this finding and the associated questioned costs. UNC stated that the errors occurred as a result of its conversion to a new enterprise system in October 2014 and noted that, since this conversion, it has continued to strengthen its controls and processes surrounding cash management and the cash draw reconciliation.

Auditors' Additional Comments: Our position regarding this finding has not changed.

Finding 4: Inappropriately Allocated Expenses

UNC did not always allocate expenses to NSF awards based on the relative benefits the awards received, as required by Federal regulations²⁰ and NSF PAPPGs.²¹ Specifically, UNC charged 18 NSF awards a total of \$88,001 in inappropriately allocated expenses.

Inappropriately Allocated Materials and Supplies Purchased Near Grant Expiration

UNC inappropriately charged six NSF awards for \$37,091 in costs incurred to purchase materials near the award's expiration date.²² Specifically:

- In May 2017, UNC charged NSF Award No. [REDACTED] for \$2,764 in costs incurred to purchase two ThinkPad laptops. Because UNC did not receive the laptops until the final week of the award's 5.7-year POP, it does not appear to have been reasonable for UNC to allocate the full cost of these laptops to this award.

²⁰ According to 2 CFR Part 220, Appendix A, Section C.4.a and 2 CFR §200.405(a), organizations should allocate costs to a particular cost objective in accordance with the relative benefits received.

²¹ NSF PAPPGs 11-1 and 13-1, 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 program solicitation. 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. 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.

²² UNC Policy 500.8, *Capitalized Equipment*, states that purchases of authorized equipment must be made well in advance of the ending date of the project period.

- *UNC agreed to reimburse NSF for these expenses.*
- In May 2017, UNC charged NSF Award No. ██████ for \$3,660 in costs incurred to restock lab supplies (specifically, fluorescently labeled polysaccharides).²³ UNC did not specifically use these lab supplies to benefit this award; instead, it incurred the costs in the final 2 months of the award’s 4-year POP to restock supplies used during the award period. The PI stated that “[a]t the end of the project in question, we were very low on the stock of labeled polysaccharides since we had used up our supply in this project, so we had to restock the pantry, returning what we had already consumed.” It therefore does not appear to have been reasonable for UNC to allocate these costs to this award.
 - *UNC agreed to reimburse NSF for these expenses.*
- In August 2017, UNC charged NSF Award No. ██████ for \$12,728 in costs incurred to purchase chemicals used to explore RNA-protein interactions. Although the PI stated that the exploration of these interactions “has become a major part of our research work,” the PI did not receive the chemicals until after the award expired. It therefore does not appear that UNC used the chemicals to benefit this award.
 - *UNC agreed to reimburse NSF for these expenses.*
- In November 2017, UNC charged NSF Award No. ██████ for \$6,630 in costs incurred to purchase diffraction kits in September 2017. The PI stated that they used the kits during a teaching course that they developed with support from this award; however, the PI only purchased the kits 5 days before the award’s POP expired, the kits were only available for 3 days of the award’s 4-year POP, and the PI did not use the kits until after the award’s POP had expired.²⁴ It therefore does not appear to have been reasonable for UNC to allocate these costs to this award.
- In March 2017, UNC charged NSF Award No. ██████ for \$4,260 in costs incurred to purchase a range of computing devices from Dell. UNC stated that these machines enabled the PI to perform grant-related research; however, the PI did not receive the machines until after the award’s POP expired. It therefore does not appear that UNC used the computing devices to benefit this award. Further, we noted that UNC did not appropriately process the cost transfer that moved this expense onto this award. (See Finding 12).
 - *UNC agreed to reimburse NSF for this expense.*
- In May 2018, UNC charged NSF Award No. ██████ for \$7,049 in costs incurred to purchase a spin coater. UNC stated that it used this item solely to support grant objectives; however, because UNC only received the item within the final 30 days of the

²³ According to NSF PAPPG 13-1, Part II, Chapter IV, Section E.5.e, grantees are to avoid stockpiling items for future use.

²⁴ UNC stated that the kits were used for experiments that took place “toward the end of the semester,” which would have been after the NSF award’s POP expired.

award's 5-year POP, it does not appear to have been reasonable for UNC to allocate the full amount of the costs to this award.

Inappropriately Allocated Travel Costs

UNC charged six NSF awards for \$22,975 in inappropriately allocated travel costs. Specifically:

- In July 2015, UNC charged NSF Award No. [REDACTED] for \$17,939 in travel costs that the PI incurred to conduct fieldwork in [REDACTED]. The PI incurred a portion of these costs to perform grant-related fieldwork from June [REDACTED] through July [REDACTED], 2015; however, the PI incurred \$3,879 of the costs for van rental and security guard services billed by the [REDACTED] in August and September 2015, after the conclusion of the grant-related fieldwork. It therefore does not appear to have been reasonable for UNC to allocate these costs to this award.
- In August 2016, 1 month before NSF Award No. [REDACTED] expired, UNC charged the award for \$6,110 in travel costs that the PI incurred to attend a [REDACTED] conference in July 2016. The PI originally stated that the travel expenses were allocable to this award because [REDACTED] attended the conference to present a grant-related poster. However, during the course of our audit, UNC determined that the PI did not present a poster at this conference; instead, [REDACTED] attended the conference for professional development. Further, although the PI provided a lodging invoice to support the hotel expenses charged to this award, we noted that the invoice identified the PI's [REDACTED], rather than the PI. The PI's [REDACTED] was the PI of NSF Award No. [REDACTED] and was identified as a presenter on the conference website. It therefore does not appear to have been reasonable for UNC to allocate these costs to NSF Award No. [REDACTED].
 - *UNC agreed to reimburse NSF for these expenses.*
- In April 2017, UNC charged NSF Award No. [REDACTED] for \$1,751 in lodging costs incurred for two graduate students to attend a conference; however, only one student's attendance at the conference benefited this NSF award. Because the second graduate student did not allocate any effort to this award, was not identified as a conference participant, and charged all of his other travel costs to a non-NSF funding source, only 50 percent of the lodging cost, or \$875, should have been allocated to this award.
 - *UNC agreed to reimburse NSF for these expenses.*
- In June 2017, the final month of the POP for NSF Award No. [REDACTED], UNC transferred \$4,911 in costs that the PI incurred to travel to [REDACTED] in 2016 from a non-sponsored funding source to NSF Award No. [REDACTED]. The PI stated that the trip to [REDACTED] was allocable to the NSF award because it enabled [REDACTED] to give a number of grant-related talks and meet with [REDACTED] collaborators; however, the annual reports submitted for this award did not discuss any grant-related travel to [REDACTED], did not identify any of the [REDACTED].

individuals with whom [REDACTED] met in [REDACTED] as award participants or collaborators,²⁵ and did not reference any talks that the PI gave in [REDACTED]. Because the PI did not report the trip, the collaborators, or the talks in the documentation for this award, it does not appear to have been reasonable for UNC to allocate the costs associated with this trip to NSF Award No. [REDACTED]. Further, we noted that UNC did not provide cost transfer documentation to support the PI's original justification for moving the trip expenses to NSF Award No. [REDACTED] approximately 1 year after the travel took place. (See Finding 12.)

- *UNC agreed to reimburse NSF for these expenses.*
- In March 2018, two months before NSF Award No. [REDACTED] expired, UNC charged the award for \$1,835 in travel costs incurred to host “a visiting speaker in [REDACTED].” This amount included \$732 in unallowable airfare. (See Finding 5.) Further, it does not appear to have been reasonable for UNC to allocate the other \$1,103 to this award, as the final report for this award did not identify the speaker, the event at which the speaker presented, or the topic of the presentation and how it related to the award.
 - *UNC agreed to reimburse NSF for these expenses.*
- In September 2014, UNC inadvertently charged NSF Award No. [REDACTED] for \$6,097 in travel costs that an employee incurred for a trip that did not benefit this NSF award.
 - *UNC agreed to reimburse NSF for this expense.*

Inappropriately Allocated Equipment Costs

UNC charged two NSF awards for \$17,617 in inappropriately allocated equipment costs. Specifically:

- In July 2016, UNC inadvertently charged NSF Award No. [REDACTED] for a \$2,950 deposit on a piece of equipment that did not benefit this NSF award.
 - *UNC agreed to reimburse NSF for this expense.*
- In January 2018, UNC charged NSF Award No. [REDACTED] for \$14,667 in costs incurred to purchase a chromatography system to replace equipment that had previously been available in the PI's lab. These costs represented 100 percent of the cost of the equipment. Based on our inquiries, UNC determined that only 27 of the 44 protein purifications performed using this equipment during the first year it was available, or 61 percent, benefited this NSF award. UNC therefore agreed to reimburse NSF for 39 percent of this expense. Although UNC does appear to have used this equipment to

²⁵ [REDACTED] of the [REDACTED] collaborators were identified as authors on three grant-related publications; however, none of these individuals were identified as collaborators or participants on this award. The other [REDACTED] individuals with whom the PI claimed to have met were not included in the annual reports.

conduct grant-related experiments, it purchased the equipment only 9 months before the NSF award expired, the equipment had a useful life that exceeded the 1-year period that UNC used to determine the percentage of the expense that it should allocate to the award, and UNC purchased the equipment to replace a chromatography system that had previously been available for general use in the laboratory. As a result, it does not appear to have been reasonable for UNC to allocate this equipment to NSF Award No. [REDACTED].

- *UNC agreed to reimburse NSF for \$5,720 of this expense.*

Inappropriately Allocated Other Direct Costs

UNC charged four NSF awards for \$10,318 in inappropriately allocated other direct costs. Specifically:

- In August 2016, UNC inadvertently charged NSF Award No. [REDACTED] for \$3,040 in costs incurred to reload pre-paid OligoCards with funding to purchase DNA oligonucleotide primers that were not used to benefit this award.
 - *UNC agreed to reimburse NSF for this expense.*
- In January 2016, UNC inadvertently charged NSF Award No. [REDACTED] for \$2,221 in IT support services that did not benefit this NSF award.
 - *UNC agreed to reimburse NSF for this expense.*
- In January 2018, UNC charged NSF Award No. [REDACTED] for \$3,217 in publication costs incurred to publish a research article in [REDACTED] publication. This expense represented 100 percent of the cost to publish this article; however, the publication does not appear to be 100 percent allocable to this award. Specifically, the article was published in the first 3 months of the award's 3-year POP and stated that the project "was initiated and carried out with funding from [REDACTED] with matching funding from UNC's [REDACTED]. Additional support was provided by NSF [REDACTED]."²⁶
 - *UNC agreed to reimburse NSF for these expenses.*
- In September 2014, UNC charged NSF Award No. [REDACTED] for \$1,840 in costs incurred to purchase four Go-Pro cameras to remotely monitor and train [REDACTED]. UNC stated that it had purchased the Go-Pros to benefit this award, the goals of which were to study [REDACTED]. However, the cameras do not appear to be allocable to this award, as (i) the goals of this NSF award did not include training [REDACTED], (ii) UNC did not report

²⁶ According to 2 CFR §200.461(a), publication costs should only be allocated as direct costs if the publication is identifiable to a particular cost objective.

either the cameras or the training of [REDACTED] as part of its grant-related activities, and (iii) the annual reports that UNC submitted for this project did not reference any of the three individuals that UNC identified as having participated in the training projects supported by the cameras.

- o *UNC agreed to reimburse NSF for these expenses.*

UNC did not have proper controls in place to ensure that it consistently allocated costs to sponsored awards based on the relative benefits that the awards received. As a result, UNC charged NSF awards for expenses that it should have allocated to alternative funding sources. We are therefore questioning \$88,001 of inappropriately allocated direct and indirect expenses. As illustrated in Table 4, UNC concurred with \$61,496 of the questioned costs and disagreed with \$26,505.

Table 4. Inappropriately Allocated Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs			UNC Agreed to Reimburse
			Direct	Indirect	Total	
May 2017 Laptops	[REDACTED]	2017	\$2,066	\$698	\$2,764	\$2,764
May 2017 Lab Supplies	[REDACTED]	2017	2,408	1,252	3,660	3,660
August 2017 Chemicals	[REDACTED]	2018	8,600	4,128	12,728	12,728
November 2017 Kits	[REDACTED]	2018	4,420	2,210	6,630	0
March 2017 Computing Devices	[REDACTED]	2017	4,260	0	4,260	4,260
May 2018 Spin Coater	[REDACTED]	2018	4,638	2,411	7,049	0
July 2015 Fieldwork	[REDACTED]	2016	3,079	800	3,879	0
August 2016 Conference	[REDACTED]	2017	4,128	1,982	6,110	6,110
April 2017 Lodging	[REDACTED]	2018	576	299	875	875
June 2017 Travel	[REDACTED]	2017	3,231	1,680	4,911	4,911
March 2018 Speaker	[REDACTED]	2018	745	358	1,103	1,103
September 2014 Travel	[REDACTED]	2015	4,011	2,086	6,097	6,097
July 2016 Deposit	[REDACTED]	2017	2,950	0	2,950	2,950
January 2018 Chromatography	[REDACTED]	2018	14,667	0	14,667	5,720
August 2016 Prepaid Cards	[REDACTED]	2017	2,000	1,040	3,040	3,040
January 2016 IT Services	[REDACTED]	2016	1,735	486	2,221	2,221
January 2018 Publication	[REDACTED]	2018	2,116	1,101	3,217	3,217
September 2014 Cameras	[REDACTED]	2015	<u>1,210</u>	<u>630</u>	<u>1,840</u>	<u>1,840</u>
Total			<u>\$66,840</u>	<u>\$21,161</u>	<u>\$88,001</u>	<u>\$61,496</u>

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

Recommendations

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

1. Resolve the \$26,505 in inappropriately allocated materials and supplies, travel, and equipment costs for which UNC has not agreed to reimburse NSF and direct UNC to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UNC to provide support verifying that it has repaid or otherwise credited the \$61,496 of questioned materials and supplies, travel, equipment, and other direct costs for which it has agreed to reimburse NSF.
3. Direct UNC to strengthen its administrative and management processes and procedures surrounding the approval of materials and supplies, travel, equipment, and other direct costs charged or transferred to an NSF award near the award's expiration date. Processes could include updating UNC's grant close-out procedures to require a more thorough review of non-payroll expenses charged to a grant within the final 90 days of the grant's POP.
4. Direct UNC to strengthen its administrative and management processes and procedures surrounding the approval of travel expense reports. Processes could include conducting annual training for those individuals responsible for reviewing and approving each department's expense reports.
5. Direct UNC to strengthen its administrative and management processes and procedures surrounding the allocation of equipment expenses to NSF awards. Processes could include requiring purchasers to justify the methodology they used to determine the percentage of the expense that should be directly allocable to sponsored funding sources before UNC charges the sponsored funding sources.
6. Direct UNC to strengthen its administrative and management processes and procedures surrounding the allocation of publication expenses. Processes could include requiring the Office of Sponsored Research (OSR) to verify that a publication specifically recognizes sponsored funding from the proposed federally sponsored project(s) before UNC charges the publication cost to sponsored funding source(s).

University of North Carolina Response: UNC agreed with the questioned costs related to inappropriately allocated materials and supplies purchased under NSF Award Nos. [REDACTED], [REDACTED], [REDACTED], and [REDACTED]; the questioned costs related to inappropriately allocated travel costs incurred under NSF Award Nos. [REDACTED], [REDACTED], [REDACTED], [REDACTED], and [REDACTED]; the questioned costs related to inappropriately allocated equipment purchased under NSF Award No. [REDACTED]; and the questioned costs related to inappropriately allocated other direct costs. However, UNC disagreed with the remaining questioned costs related to materials and supplies, travel, and equipment. Specifically:

- With regard to the \$6,630 in questioned materials and supplies charged to NSF Award No. [REDACTED] for the purchase of diffraction kits, UNC stated that it believes the costs should be allowable because the PI received the kits before the NSF award expired and used the kits to achieve project goals. Specifically, UNC stated that, because the objective of NSF Award No. [REDACTED] was to develop courses that UNC would continue to teach

after the award's POP ended, costs related to kits that UNC would use during courses that occurred after the award's POP ended should be allowable.

- With regard to the \$7,049 in questioned materials and supplies charged to NSF Award No. [REDACTED] for the purchase of a spin coater, UNC stated that it believes the costs should be allowable because the spin coater directly benefited the award and substantially contributed to the project's success. Specifically, UNC noted that the cost should be allowable because the spin coater was a necessary component of experiments conducted during the last month of the project.
- With regard to the \$3,879 in questioned travel costs charged to NSF Award No. [REDACTED], UNC stated that it believes the costs should be allowable because they related to vehicle rental and security costs that were necessary to enable UNC to conduct grant-related fieldwork in [REDACTED] after the PI departed the fieldwork site.
- With regard to the remaining \$8,947 of the original \$14,667 in questioned equipment costs charged to NSF Award No. [REDACTED], UNC stated that it believes the costs should be allowable because it calculated the 61 percent allocation rate "based on actual usage" of the equipment.

Auditors' Additional Comments: Our position regarding this finding has not changed. Specifically:

- With regard to the \$6,630 in questioned materials and supplies charged to NSF Award No. [REDACTED] for the purchase of diffraction kits, because UNC did not use the kits during the award's POP, our conclusion regarding this finding has not changed. Specifically, because the PI appears to have purchased the kits in an effort to use the remaining funding under the award before the award expired, rather than because the kits were necessary to achieve the award objectives, these costs are not allocable to this award.
- With regard to the \$7,049 in questioned materials and supplies charged to NSF Award No. [REDACTED] for the purchase of a spin coater, because UNC only used the spin coater to perform experiments under this NSF award for one month and therefore would have used the spin coater to benefit other projects for the remainder of its useful life, our conclusion that the award was not charged in accordance with the overall relative benefits that UNC received from the spin coater has not changed.
- With regard to the \$3,879 in questioned travel costs charged to NSF Award No. [REDACTED], because UNC was unable to provide any documentation to support that fieldwork occurred after the PI departed or that the [REDACTED] required UNC to incur the vehicle rental and security costs, our conclusion regarding this finding has not changed. Specifically:
 - UNC claimed that fieldwork continued after the PI left the site in July; however, the invoices that UNC provided did not support that UNC incurred any costs for

field labor during August or September, when UNC invoiced NSF for the vehicle rental and security costs.

- UNC claimed that the [REDACTED] required UNC to pay security guard fees throughout the year, even when UNC was not actively performing fieldwork; however, UNC only invoiced NSF for security fees incurred in April, May, June, and September.
- With regard to the remaining \$8,947 of the original \$14,667 in questioned equipment costs charged to NSF Award No. [REDACTED], because UNC purchased the machine to replace general-use lab equipment and the machine's useful life exceeded the 1-year period UNC used in performing its analysis, our conclusion that the award was not charged in accordance with the overall relative benefits that UNC received from the equipment has not changed.

Finding 5: Unallowable Expenses

During the audit period, UNC charged 15 NSF awards for \$86,607 in expenses that were expressly unallowable under Federal regulations, NSF policies and procedures, and/or UNC policies, as follows:

Unallowable Pre-Award Costs

UNC charged NSF Award No. [REDACTED] for \$29,103 in unallowable pre-award costs.²⁷ Specifically:

- In February 2016, UNC charged NSF Award No. [REDACTED] for \$29,103 in travel costs that the PI incurred while performing research in [REDACTED]. The award's budget included funding to perform research in [REDACTED]; however, the PI performed the travel from November [REDACTED] through November [REDACTED] 2014, more than 90 days before the award's effective date of March 1, 2015.
 - In addition to these costs representing unallowable pre-award expenses, we noted that \$1,672 of the \$29,103 questioned represented unallowable per diem costs, as the PI requested reimbursement for meal and lodging expenses using both actual receipts and per diem during the same trip.²⁸ Specifically, the PI claimed reimbursement for actual meal and lodging expenses for the first [REDACTED] nights of the trip, then stayed at [REDACTED] residence in [REDACTED] for the final [REDACTED] nights of the trip. The PI claimed the maximum allowable meal and lodging per diem of [REDACTED] per night, or \$1,672, for the [REDACTED] nights that [REDACTED] stayed at [REDACTED] residence "so that [REDACTED] may reimburse [REDACTED] for the use of [REDACTED] home." The PI stated that he stayed at [REDACTED] residence "to save research funds"; however, the per diem

²⁷ NSF PAPPG 15-1, Part II, Chapter V, Section A.2.b. states that NSF must approve costs incurred more than 90 days before the start date of a grant.

²⁸ According to 2 CFR §200.474, costs related to travel can be reimbursed on either an actual basis or a per diem basis, provided that the traveler consistently applies this basis to the entire trip.

amount was higher than was the amount claimed based on the actual costs of lodging and meals during the first week of the trip.

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

Unallowable Foreign Meal Per Diem

UNC limits the total amount of per diem that travelers may claim for out-of-country meals when using state-appropriated funding; however, it allows travelers supported by Federal contracts and grants to claim reimbursement based on the allowances published by the U.S. Department of State. This practice is expressly unallowable under Federal regulations.²⁹ As a result, UNC charged \$13,315 in unallowable foreign meal per diem to three NSF awards. Specifically:

- In September 2014, UNC charged NSF Award No. [REDACTED] for \$5,988 in unallowable meal per diem because the PI (i) claimed meal per diem at a rate of \$119 per day,³⁰ rather than the \$39.80 per day allowable when using state-appropriated funds, and (ii) claimed meal per diem on two personal days.³¹
 - *UNC agreed to reimburse NSF for these expenses.*
- In September 2014, UNC charged NSF Award No. [REDACTED] for \$4,559 in unallowable meal per diem because the PI claimed meal per diem at a rate of \$80 per day, rather than the \$39.80 per day allowable when using state-appropriated funds.³²
- In December 2016, UNC charged NSF Award No. [REDACTED] for \$2,768 in unallowable meal per diem because a graduate student claimed meal per diem at a rate of \$75 per day, rather than the \$40.50 per day allowable when using state-appropriated funds.³³

Unallowable Use of Funds Provided for Participant Support

UNC inappropriately used \$11,355 in funding provided for PSCs to cover non-participant expenses.³⁴ Specifically:

- The budget for NSF Award No. [REDACTED] included \$35,000 in PSC funding to support travel expenses incurred to enable participants to attend grant-related workshops;

²⁹ According to 2 CFR 220 Appendix A, Section J.53.a and 2 CFR §200.474(a) the method used to reimburse costs related to travel must be consistent with those methods normally allowed in like circumstances in the institution's non-federally-sponsored activities.

³⁰ Although the PI traveled to a variety of cities in [REDACTED] that had meal per diem rates ranging from \$93 to \$119, [REDACTED] claimed the \$119 rate for each day of his trip.

³¹ *UNC Policy on Statutory Provisions and Maximum Rates for Travel* (Policy 1302), updated January 9, 2014, limited total per diem meal expenses for out-of-state travel to \$39.80.

³² UNC Policy 1302, updated January 9, 2014, limited total per diem meal expenses for out-of-state travel to \$39.80.

³³ UNC Policy 1302, updated July 18, 2016, limited total per diem meal expenses for out-of-state travel to \$40.50.

³⁴ According to NSF PAPPG 15-1, Part II, Chapter V, Section A.3.b.4, grantees must have written prior approval from the cognizant NSF program officer before reallocating PSC funds. Moreover, page 4 of the NSF Proposal and Award Policy Newsletter, Issue II, May/June 2017, states that speakers and trainers are not considered participants and should not be included in the PSC section of the budget.

however, UNC used at least \$11,355 of the PSC funds to support non-participant expenses without first obtaining the NSF program officer's approval to do so.³⁵

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

Unallowable Airfare Expenses

UNC charged six NSF awards for \$14,580 in unallowable personal³⁶ and upgraded³⁷ airfare expenses, as well as airfare expenses that did not comply with the *Fly America Act*.³⁸ Specifically:

- In August 2015, UNC charged NSF Award No. [REDACTED] for \$4,785 in airfare costs that the PI incurred to perform both business and personal travel. Although some of the PI's flight dates, segments, and locations had a business purpose, a number of them did not, and UNC did not maintain documentation to support that the additional flights taken and the changes in travel dates did not increase the total airfare expenses above the expenses that UNC would have incurred if the PI had only performed grant-related travel.
 - *UNC agreed to reimburse NSF for these expenses.*
- In September 2014, UNC charged NSF Award No. [REDACTED] for \$2,533 in airfare costs incurred for a student's one-way ticket to [REDACTED], purportedly to allow the student to collaborate with an individual on grant-related topics. Although UNC did identify the individual that the student purportedly visited as a collaborator on the award, the student did not book the airfare using an American flag carrier, and UNC did not complete an exemption form to support that NSF had approved this exemption.
 - *UNC agreed to reimburse NSF for this expense.*
- In August 2015, UNC charged NSF Award No. [REDACTED] for \$2,051 in airfare costs incurred to allow an undergraduate student to participate in a grant-related conference. The purpose of the trip appears to have benefited this award; however, the student booked two legs of the sampled airfare using unjustified premium-economy fares.

³⁵ We are questioning the \$10,000 discrepancy between the PSC budget of \$35,000 and the \$25,000 in expenses recorded in UNC's PSC account for this award, as well as \$1,355 of PSC funds that UNC inappropriately used to support speaker expenses.

³⁶ According to 2 CFR 220 Appendix A, Section J.53.a and 2 CFR §200.474(a), travel costs are the expenses incurred by employees who are in travel status on official business. Moreover, according to UNC Policy 1310, *UNC Policy on Transportation Expenses*, costs of personal travel before or after days of business travel, excess costs, indirect routes, and services that are unnecessary, unjustified, or for the convenience or personal preference of the employee in the performance of official University business are prohibited. Further, UNC Policy 1308, *UNC Policy on Travel Expenses*, states that the University will not reimburse for costs for personal travel before or after business travel.

³⁷ According to 2 CFR 220 Appendix A, Section J.53.c.(1) and 2 CFR §200.474 (d)(1), travelers must meet certain criteria to be allowed to incur airfare in excess of the standard commercial airfare.

³⁸ According to NSF PAPPG 15-1, Part II, Chapter VI, Section F.1.b.(i-ii) and UNC Policy 1310, travelers must comply with the *Fly America Act* (49 USC 40118), which requires travelers to use U.S. flag carriers if they are traveling using funds provided by the Federal Government.

- *UNC agreed to reimburse NSF for these expenses.*
- In August 2017, UNC charged NSF Award No. [REDACTED] for \$840 in airfare costs that the PI incurred for personal travel associated with flights to and from [REDACTED]. The PI appeared to have traveled to the locations that preceded and succeeded the trip to [REDACTED] for grant-related purposes; however, UNC did not maintain documentation to support that the additional flights taken for personal travel did not increase the total airfare expenses above the expenses that UNC would have incurred if the PI had only performed grant-related travel.
 - *UNC agreed to reimburse NSF for these expenses.*
- In August 2017, UNC charged NSF Award No. [REDACTED] for \$2,750 in airfare costs that the PI incurred for a departure flight from [REDACTED] to [REDACTED] and for a return flight from [REDACTED] to [REDACTED]. The PI's departure flight to [REDACTED] does appear to have benefited the award; however, the PI's return flight from [REDACTED] was the result of personal travel, and UNC did not maintain documentation to support that the return flight taken from a different country as a result of personal travel did not increase the total airfare expenses above the expenses that UNC would have incurred if the PI had only performed grant-related travel.
 - *UNC agreed to reimburse NSF for these expenses.*
- In March 2018, UNC charged NSF Award No. [REDACTED] for \$732 in airfare costs incurred to allow a speaker to present at UNC, as well as to take personal travel to [REDACTED]. In addition to the traveler's expenses not being allocable to this NSF award (see Finding 5), UNC did not maintain documentation to support that the additional flight taken for personal travel did not increase the total airfare expenses above the expenses that UNC would have incurred if the speaker had only performed grant-related travel.
 - *UNC agreed to reimburse NSF for these expenses.*
- In August 2018, UNC charged NSF Award No. [REDACTED] for \$889 in airfare costs incurred to allow a student to participate in a grant-related conference. The purpose of the trip appears to have benefited this award; however, the traveler purchased unjustified first-class and business-class tickets.
 - *UNC agreed to reimburse NSF for these expenses.*

Unallowable Other Direct Costs

UNC charged five NSF awards for \$10,737 in other unallowable expenses. Specifically:

- In November 2015, UNC charged NSF Award No. [REDACTED] for \$3,700 in relocation expenses for a postdoctoral fellow who was not named in the award proposal, was not paid under this award, and was not identified in the annual reports for this award.³⁹
 - *UNC agreed to reimburse NSF for these expenses.*
- In June 2016, UNC charged NSF Award No. [REDACTED] for \$239 for the use of a luxury car service.⁴⁰
 - *UNC agreed to reimburse NSF for this expense.*
- In August 2015, UNC charged NSF Award No. [REDACTED] for \$1,206 in unallowable costs related to the purchase of cigarettes and gifts (\$593 and \$613, respectively).⁴¹
 - *UNC agreed to reimburse NSF for these expenses.*
- In February 2018, 6 months before NSF Award No. [REDACTED] expired, UNC charged the award \$2,753 for an H1B visa and expedited visa processing fees (\$1,210 and \$1,544, respectively).⁴²
 - *UNC agreed to reimburse NSF for these expenses.*
- In August 2018, UNC charged NSF Award No. [REDACTED] for \$2,839 in overtime earned by a temporary employee who provided system programming services. Although the employee certified that their services were allocable to this award, UNC did not request or receive NSF's approval to charge overtime to this award, as required to be allowable per UNC policy.⁴³
 - *UNC agreed to reimburse NSF for these expenses.*

³⁹ According to 2 CFR §200.464, relocation costs can be charged to the federal government so long as the individual being relocated is working on the award.

⁴⁰ According to UNC travel policies, all travel options must be coach/economy fares.

⁴¹ According to 2 CFR 220, Appendix A, Section J.1(f)(3), the costs of models, gifts, and souvenirs are expressly unallowable.

⁴² According to NSF PAPPG 13-1, Part II, Chapter VI, Section G.4, NSF does not assume any responsibility for securing required passports or visas.

⁴³ Per UNC Policy 500.05, *Personnel Expenditures*, Section 1, overtime for non-professional personnel is allowable to the extent approved by the awarding agency.

Unallowable Lodging Expenses

UNC charged three NSF awards for \$7,517 in lodging costs that exceeded the maximum amount allowed without obtaining advance approval to do so, as required per UNC's policies.⁴⁴

Specifically:

- In September 2014, UNC charged NSF Award No. [REDACTED] for \$3,302 in unallowable lodging costs because the PI (i) claimed lodging per diem at a rate of \$258 per night,⁴⁵ rather than the \$117.70 per night⁴⁶ that was allowable when using state-appropriated funds for foreign travel, and (ii) claimed lodging per diem on two personal days.
 - *UNC agreed to reimburse NSF for these expenses.*
- In July 2016, UNC charged NSF Award No. [REDACTED] for \$889 in unallowable lodging costs because the PI claimed reimbursement for actual lodging costs incurred at a rate of \$289 per night, rather than the \$120 per night⁴⁷ that was allowable when using state-appropriated funds for out-of-state travel.
- In January 2017, UNC charged NSF Award No. [REDACTED] for \$1,330 in unallowable lodging costs because the PI claimed reimbursement for actual lodging costs incurred at a rate of \$245 per night, rather than the \$120 per night⁴⁸ that was allowable when using state-appropriated funds for out-of-state travel.
- In July 2017, UNC charged NSF Award No. [REDACTED] for \$1,106 in unallowable lodging costs because the PI claimed reimbursement for actual lodging costs incurred at a rate of \$279 per night, rather than the \$120 per night⁴⁹ that was allowable when using state-appropriated funds for out-of-state travel.
- In September 2017, UNC charged NSF Award No. [REDACTED] for \$890 in unallowable lodging costs because a graduate student claimed reimbursement for actual lodging costs

⁴⁴ According to 2 CFR 220 Appendix A, Section J.53.b and 2 CFR §200.474(b), costs incurred for lodging must be considered reasonable and otherwise allowable only to the extent that such costs do not exceed charges normally allowed by the non-Federal entity's written travel policy.

⁴⁵ Although the PI traveled to a variety of cities in [REDACTED] that had lodging per diem rates ranging from \$152 to \$258, [REDACTED] claimed the \$258 rate for all 17 nights.

⁴⁶ UNC Policy 1302, updated January 9, 2014, states that the allowable lodging per diem rate for foreign travel was \$77.60 per day; however, the policies allow travelers to exceed the part of the ceiling allocated for lodging without obtaining advance approval as long as the total lodging and meal reimbursement does not exceed the maximum daily subsistence rate. We therefore used the maximum daily subsistence rate of \$117.70 as the allowable lodging per diem rate.

⁴⁷ UNC Policy 1302, updated March 14, 2016, stated that the maximum lodging per diem rate for out-of-state travel was \$79.50 per night and the maximum daily subsistence rate was \$120 per day.

⁴⁸ UNC Policy 1302, updated July 18, 2016, stated that the maximum lodging per diem rate for out-of-state travel was \$79.50 per night and that the maximum daily subsistence rate was \$120 per day.

⁴⁹ UNC Policy 1302, updated July 18, 2016, stated that the maximum lodging per diem rate for out-of-state travel was \$79.50 per night and that the maximum daily subsistence rate was \$120 per day.

incurred at a rate of \$239 per night, rather than the \$109.50 per night⁵⁰ that was allowable when using state-appropriated funds for out-of-state travel.

UNC did not have sufficient policies and procedures in place to ensure that it only charges allowable expenses to NSF awards. As a result, UNC charged NSF awards for expenses that are expressly unallowable under Federal, NSF, and/or UNC-specific regulations/policies. We are therefore questioning \$86,607 of unallowable direct and indirect expenses. As illustrated in Table 5, UNC agreed with \$75,065 of the questioned costs and disagreed with \$11,542.

Table 5. Unallowable Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs			UNC Agreed to Reimburse
			Direct	Indirect	Total	
February 2016 Pre-Award Costs	██████	2016	\$19,147	\$9,956	\$29,103	\$29,103
September 2014 Meal Per Diem	██████	2015	4,752	1,236	5,988	5,988
September 2014 Meal Per Diem	██████	2015	2,999	1,560	4,559	0
December 2016 Meal Per Diem	██████	2017	2,197	571	2,768	0
Unallowable PSCs	██████	N/A	11,355	0	11,355	11,355
August 2015 Airfare	██████	2016	3,233	1,552	4,785	4,785
September 2014 Airfare	██████	2015	1,712	821	2,533	2,533
August 2015 Airfare	██████	2016	2,051	0	2,051	2,051
August 2017 Airfare	██████	2018	553	287	840	840
August 2017 Airfare	██████	2018	1,858	892	2,750	2,750
March 2018 Airfare	██████	2018	495	237	732	732
August 2018 Airfare	██████	2019	889	0	889	889
November 2015 Relocation	██████	2016	2,500	1,200	3,700	3,700
June 2016 Car Service	██████	2016	239	0	239	239
August 2015 Gifts	██████	2016	957	249	1,206	1,206
February 2018 Visas	██████	2018	2,185	568	2,753	2,753
August 2018 Salary	██████	2019	1,868	971	2,839	2,839
September 2014 Lodging	██████	2015	2,621	681	3,302	3,302
July 2016 Lodging	██████	2017	585	304	889	0
January 2017 Lodging	██████	2017	875	455	1,330	0
July 2017 Lodging	██████	2018	728	378	1,106	0
September 2017 Lodging	██████	2018	585	305	890	0
		Total	<u>\$64,384</u>	<u>\$22,223</u>	<u>\$86,607</u>	<u>\$75,065</u>

Source: Auditor summary of questioned transactions.

⁵⁰ UNC's Policy 1302, updated July 1, 2017, stated that the maximum lodging per diem rate for in-state travel was \$71.20 per night and that the maximum daily subsistence rate was \$109.50 per day.

Recommendations

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

1. Resolve the \$11,542 in meal and lodging per diem expenses for which UNC has not agreed to reimburse NSF and direct UNC to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UNC to provide support verifying that it has repaid or otherwise credited the \$75,065 in questioned pre-award, PSC, airfare, and other direct cost expenses for which it has agreed to reimburse NSF.
3. Direct UNC to strengthen its administrative and management processes and procedures surrounding the review of pre-award travel expenses. Processes could include implementing a control that flags any instances in which a traveler's actual travel dates are outside an award's POP for additional review.
4. Direct UNC to update its meal and lodging per diem policies to comply with Federal regulations. Specifically, the updated policy should only allow UNC to reimburse travelers for per diem claimed on Federal awards if the rates do not exceed the charges that UNC normally allows in its regular operations.
5. Direct UNC to strengthen its administrative and management processes and procedures surrounding the use of PSC funding. Processes could include:
 - a. Performing periodic reviews of all costs accumulated within account codes established to track PSCs to ensure that all costs accumulated within those account categories relate to costs incurred to support participants.
 - b. Establishing a control that does not allow UNC to transfer funding from account codes established to track PSCs to cover other grant-related expenses without first obtaining approval from its Federal sponsor.
6. Direct UNC to strengthen its administrative and management processes and procedures surrounding the approval of airfare expenses. Processes could include:
 - a. Conducting annual training for those individuals responsible for reviewing and approving each department's expense reports.
 - b. Issuing specific guidance regarding how travelers should document that any combined business and personal travel did not increase the total airfare expenses above the expenses that UNC would have incurred if the traveler had only performed business-related travel.
 - c. Implementing controls to flag all airfare purchases not booked through a U.S. flag carrier for additional review.

7. Direct UNC to strengthen its administrative processes surrounding the approval of other direct costs charged to Federal awards. Processes could include conducting annual training for all relevant department personnel regarding the types of costs that can be identified as expressly unallowable under Federal, Federal agency, and UNC policies and procedures.

University of North Carolina Response: UNC agreed with the questioned costs related to unallowable pre-award costs, meal and lodging costs under NSF Award No. [REDACTED], PSCs, airfare expenses, and other direct costs.⁵¹ UNC disagreed that the remaining foreign meal per diem and lodging costs were unallowable, stating that UNC followed its own travel policies, as required by Federal and NSF guidance. Specifically, UNC noted that, because UNC policy allows for the use of foreign per diem rates when using both state and Federal funds, it considers its use of foreign per diem rates for Federal funds to be a consistent application of UNC and State of North Carolina policy and therefore allowable under NSF and Federal guidance.

Auditors' Additional Comments: UNC stated that both UNC and State of North Carolina travel policies allowed for the use of foreign per diem on non-Federal awards; however, the UNC *Statutory Provisions and Maximum Rates for Travel* policies effective at the time did not indicate that UNC may grant per diem exceptions for non-Federal travel. Rather, the policies specifically identified maximum meal and lodging costs that travelers may claim when UNC pays travel expenses using State-appropriated funds or UNC Finance & Operations funds. As a result, our conclusion regarding this finding has not changed.

Finding 6: Indirect Costs Not Appropriately Applied

UNC inappropriately applied indirect costs to expenses that should not have been accounted for as Modified Total Direct Costs (MTDCs), to which UNC's indirect cost rates can be applied, per Federal guidance and UNC's Negotiated Indirect Cost Rate Agreements (NICRAs).⁵² As a result, UNC charged nine NSF awards for \$65,314 in indirect costs inappropriately applied to equipment, capital expenditures, participant support, and subaward expenses.

Indirect Costs Inappropriately Applied to Equipment Expenses

⁵¹ UNC's formal response letter indicated that it accepted these findings; however, the exhibit that UNC attached to its letter indicated that UNC "reserves the right to discuss" the \$2,753 of questioned visa costs charged to NSF Award No. [REDACTED], as well as the \$2,839 of questioned salary costs charged to NSF Award No. [REDACTED].

⁵² According to 2 CFR Part 220, Appendix A, Section G.2 and the three UNC NICRAs that published the effective rates for the period from July 1, 2005, through June 30, 2020, equipment, capital expenditures, and subaward costs exceeding \$25,000 should be excluded from the indirect cost base. Further, 2 CFR §200.68 and the UNC NICRA that published the effective rates for the period from July 1, 2016, to June 30, 2020, states that PSCs should be excluded from the indirect cost base.

UNC charged seven NSF awards for \$64,188 in indirect costs inappropriately applied to equipment costs.⁵³ Specifically:

- In August 2015, UNC charged NSF Award No. [REDACTED] for \$9,100 in indirect costs applied on direct costs incurred to purchase a mirror that the PI intended to install on a microscope. UNC stated that it had not capitalized the expense because it related to consumable supplies. However, because the mirror was an asset with a cost that exceeded \$5,000 and had a useful life that exceeded 1 year, UNC should not have considered it a consumable supply. Specifically, UNC should have accounted for the mirror as an “addition to existing equipment”⁵⁴ and capitalized the expense.
 - *UNC agreed to reimburse NSF for these costs.*
- In December 2015, UNC charged NSF Award No. [REDACTED] for \$4,557 in indirect costs applied on direct costs incurred to purchase computer equipment. In addition to being unable to provide adequate support for the direct costs (see Finding 7 for additional information), UNC inappropriately applied indirect costs to direct costs incurred to purchase equipment.
 - *UNC agreed to reimburse NSF for these costs.*
- In December 2016, UNC charged NSF Award No. [REDACTED] for \$5,196 in indirect costs applied on direct costs incurred to purchase computer equipment. However, because the cost of the computer exceeded \$5,000 and its useful life exceeded 1 year, UNC should have accounted for the computer as equipment and capitalized the expense.
 - *UNC agreed to reimburse NSF for these costs.*
- In May 2017, UNC charged NSF Award No. [REDACTED] for \$2,675⁵⁵ in indirect costs applied on four payments made to a single vendor on the same date to purchase components for a new server. Specifically, the PI noted that the items purchased were components for a server fabricated to analyze new algorithms developed as part of the grant. Because the cumulative cost of the components exceeded \$5,000 and the fabricated

⁵³ NSF PAPPGs 11-1, 13-1, 14-1, 15-1, 16-1, and 18-1, Part I, Chapter II, Section C.2.g.(iii) state that equipment is defined as tangible personal property having a useful life of more than 1 year and a per-unit acquisition cost that equals or exceeds \$5,000. Further, these PAPPGs note that acquisition cost of equipment includes modifications, attachments, and accessories necessary to make the property usable for the purpose for which it was purchased. Additionally, UNC Policy 601, *UNC Policy on Definition of Equipment*, notes that equipment that has an acquisition cost of \$5,000, has a life span in excess of 1 year, is made of non-expendable material, and is not made for consumption should be capitalized. Policy 601 also notes that additions to existing equipment costing \$5,000 or more per item become part of the original equipment.

⁵⁴ The Special Situations section of UNC Policy 601 notes that additions to existing equipment costing \$5,000 or more per item become part of the original equipment. Specifically, the policy notes that an example of an addition would include an additional lens added to a microscope if the price exceeded \$5,000.

⁵⁵ We calculated the questioned indirect costs by beginning with total purchase price of \$8,497.36 and subtracting the \$3,354.04 that UNC removed from the award in April 2018, leaving \$5,143.32 of direct costs on this award (the amount questioned in Finding 4). We then multiplied the \$5,143.32 of direct costs by the 52 percent indirect cost rate to arrive at the \$2,674.53 in questioned indirect costs.

server had a useful life that exceeded 1 year, UNC should have accounted for the components as equipment and capitalized the expense.

- *UNC agreed to reimburse NSF for these costs.*
- In April 2018, UNC charged NSF Award No. [REDACTED] for \$4,957 in indirect costs applied on direct costs incurred to purchase special-purpose computer equipment for use in grant-related research. However, because the cost of the computer exceeded \$5,000 and its useful life exceeded 1 year, UNC should have accounted for the computer as equipment and capitalized the expense.
 - *UNC agreed to reimburse NSF for these costs.*
- In May 2018, UNC charged NSF Award No. [REDACTED] for \$10,529 in indirect costs applied on direct costs incurred to purchase photo detectors and associated power sources for use in grant-related research. Each individual item purchased had a cost of less than \$5,000; however, the combined cost of each photo detector exceeded \$5,000 after including the accessories necessary to make the property usable, and each photo detector had a useful life that exceeded 1 year. Further, UNC purchased the photo detectors as components for a capital asset (specifically, a photon microscope) with a value exceeding \$5,000. UNC therefore should have accounted for the items as equipment and capitalized the expense.
 - *UNC agreed to reimburse NSF for these costs.*
- In July 2018, UNC charged NSF Award No. [REDACTED] for \$26,662 in indirect costs applied on direct costs incurred to purchase a deformable microscope mirror with a tripper option and rotation stage. Because the cost of the mirror exceeded \$5,000 and its useful life exceeded 1 year, UNC should have accounted for the mirror as equipment and capitalized the expense.
 - *UNC agreed to reimburse NSF for these costs.*
- In September 2014, UNC charged NSF Award No. [REDACTED] for \$512 in indirect costs applied on direct costs incurred to purchase circuit boards for a wave-generating machine. The cost of each individual item purchased was less than \$5,000; however, UNC purchased these circuit boards as components “required for the successful operation of the wave machine,” the building of which was an objective of the award. Because these components were necessary to make the wave machine usable, and because the wave machine had an acquisition cost that exceeded \$5,000 when assembled and a useful life that exceeded 1 year, UNC should have accounted for these items as equipment and capitalized the component expenses.
 - *UNC agreed to reimburse NSF for these costs.*

Indirect Costs Inappropriately Applied to Capital Expenditures

UNC charged NSF Award No. [REDACTED] for \$730 in indirect costs inappropriately applied to capital expenditures.⁵⁶ Specifically:

- In September 2016, UNC charged NSF Award No. [REDACTED] for \$730 in indirect costs applied on direct costs incurred to install a central air line for a sterile chamber in the PI's lab. Because this expense related to a capital expenditure and UNC incurred the expense for a modification that added to the permanent value of the lab, UNC should not have applied indirect costs to the expenses.
 - *UNC agreed to reimburse NSF for these costs.*

Indirect Costs Inappropriately Applied to PSCs

UNC charged NSF Award No. [REDACTED] for \$396 in indirect costs inappropriately applied to PSCs.⁵⁷ Specifically:

- In June 2018, UNC charged NSF Award No. [REDACTED] for \$396 in indirect costs applied on direct costs incurred to provide participant lodging at a grant-related retreat.
 - *UNC agreed to reimburse NSF for these costs.*

UNC did not have sufficient policies and procedures in place to ensure that it appropriately accounted for material/supply and equipment purchases based on the item's purchase price and useful life. Specifically, UNC did not always appropriately consider whether component items purchased were usable without being installed onto an existing piece of equipment, or whether improvements made to capital expenditures increased the permanent value of the expenditure. In addition, UNC does not have appropriate controls in place to ensure that costs incurred to support participants are appropriately segregated within an account established to ensure that UNC does not apply indirect costs to these expenses. As a result, we are questioning \$65,314 of indirect costs applied to expenses that UNC should not have accounted for as MTDCs. As illustrated in Table 6, UNC agreed with the \$65,314 in questioned costs.

⁵⁶ According to 2 CFR §200.13, "capital expenditures" refers to expenditures to acquire capital assets or expenditures to make additions, improvements, modifications, replacements, rearrangements, reinstallations, renovations, or alterations to capital assets that materially increase the value of their useful life.

⁵⁷ In addition to the Federal and UNC NICRA criteria previously cited, NSF PAPPG 16-1, Part I, Chapter II, Section C.2.g.(v) states that indirect costs are not allowed on PSCs.

Table 6. Indirect Costs Not Appropriately Applied

Description	NSF Award No.	Fiscal Year	Questioned Costs	UNC Agreed to Reimburse
August 2015 Indirect Costs Applied to Equipment	██████	2016	\$9,100	\$9,100
December 2015 Indirect Costs Applied to Equipment	██████	2016	4,557	4,557
December 2016 Indirect Costs Applied to Equipment	██████	2017	5,196	5,196
May 2017 Indirect Costs Applied to Equipment	██████	2017	2,675	2,675
April 2018 Indirect Costs Applied to Equipment	██████	2018	4,957	4,957
May 2018 Indirect Costs Applied to Equipment	██████	2018	10,529	10,529
July 2018 Indirect Costs Applied to Equipment	██████	2019	26,662	26,662
September 2014 Indirect Costs Applied to Equipment	██████	2015	512	512
September 2016 Indirect Costs Applied to Capital Expenditures	██████	2017	730	730
June 2018 Indirect Costs Applied to PSCs	██████	2018	396	396
Total Questioned Costs			<u>\$65,314</u>	<u>\$65,314</u>

Source: Auditor summary of identified instances of questioned transactions.

Recommendations

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

1. Direct UNC to provide support verifying that it has repaid or otherwise credited the \$65,314 of questioned indirect costs for which it has agreed to reimburse NSF.
2. Direct UNC to strengthen its administrative and management procedures for applying indirect costs to Federal awards. Processes could include:
 - a. Requiring that personnel manually review materials and supplies purchases to evaluate whether UNC should account for the items as equipment. Specifically, UNC should consider whether the items purchased either have a value of more than \$5,000 or are necessary for the use of an asset that would have a total value of more than \$5,000.
 - b. Implementing an annual review process for travel costs charged to awards that include funding for PSCs to ensure that UNC is appropriately segregating PSCs in accounts that UNC has excluded from the MTDC base.

University of North Carolina Response: UNC agreed with this finding and the associated questioned costs. UNC stated that the issue occurred because personnel inadvertently used an incorrect account code to record the expenses.

Auditors’ Additional Comments: Our position regarding this finding has not changed.

Finding 7: Goods and Services Not Appropriately Procured

UNC charged five NSF awards a total of \$35,578 in unallowable expenses because it did not appropriately source all goods and services invoiced during the audit period.

Goods and Services Not Appropriately Competitively Bid

UNC charged five NSF awards a total of \$35,578 in costs invoiced by vendors that UNC had not appropriately selected through competitive bidding activities to ensure that it did not over-pay for goods and services, as required by UNC policies.⁵⁸ Specifically, because UNC did not conduct procurement actions in a manner that provided free and open competition, we were unable to verify that UNC appropriately procured the vendors in accordance with Federal policies.⁵⁹ Further, we were unable to verify that the costs charged by nine vendors were reasonable because UNC's Purchasing Services did not search for the vendor that would provide the best price and best quality before obtaining the goods or services,⁶⁰ as follows:

- Between August 2015 and February 2016, UNC charged NSF Award No. [REDACTED] for \$12,418 in costs incurred to pay a vendor that provided equipment and other services used in grant-related research. However, UNC did not perform competitive bidding activities or complete a sole-source justification form before obtaining these services.⁶¹
- In May 2017, UNC charged NSF Award No. [REDACTED] for \$12,916 in costs incurred for four payments made to a single vendor on the same date to purchase components for a new server. The cumulative cost of the components exceeded \$5,000; however, because the vendor split the purchase into four separate invoices that were each less than \$5,000, UNC did not appropriately perform competitive bidding activities or complete a sole-source justification form before ordering the equipment.
 - *Because UNC removed \$5,098 of these costs from the award in April 2018, and because we questioned all the indirect costs applied to this equipment in Finding 6, we are only questioning \$5,143 in this finding; which UNC agreed to reimburse.*
- In September 2017, UNC charged NSF Award No. [REDACTED] for \$7,957 in costs incurred to purchase equipment used in grant-related research; however, UNC did not perform competitive bidding activities or complete a sole-source justification form before

⁵⁸ UNC Policy 1231, *Solicitation of Quotations, Bids, and Proposals*, states that for purchases exceeding \$5,000, the buyer must receive at least three quotes; for purchases between \$10,000 and \$500,000, the buyer must undergo a sealed formal bid procedure; and for purchases exceeding \$500,000, the buyer must contact the State Division of Purchase and Contract to obtain appropriate bidding practices.

⁵⁹ According to 2 CFR §215.43 and 2 CFR §200.319(a), all procurement transactions must be conducted in a manner providing full and open competition.

⁶⁰ UNC Policy 1231, *Solicitation of Quotations, Bids, and Proposals*, states that Purchasing Services must search for the vendor who will provide the best price, best quality, delivery time, and other factors deemed advantageous to UNC.

⁶¹ UNC provided a waiver-of-competition form for this vendor; however, UNC completed the form 4 years after the vendor provided the services, in response to our audit request.

ordering the equipment. Further, UNC did not complete the purchase order (PO) authorizing this expense until after the vendor had invoiced the equipment and the grant’s POP had expired.

- In November 2017, UNC charged NSF Award No. [REDACTED] for \$10,060 in costs incurred to purchase a microscope used to perform grant-related research; however, UNC did not perform competitive bidding activities or complete a sole-source justification form before ordering the equipment. UNC stated that it instead relied on a “competitively bid contract that [REDACTED] did for camera equipment.” Further, although the budget for this award stated that UNC was not requesting any funding for microscopes, “as all necessary instruments... are in place to facilitate the proposed work,” the PI purchased the equipment less than 2 months after the grant’s POP began because the microscope had undergone a price decrease.
- In January 2016, UNC charged NSF Award No. [REDACTED] for \$2,221 in IT support services awarded under a \$60,075 PO. In addition to the costs not being allocable to this award (see Finding 5), UNC did not perform competitive bidding activities or complete a sole-source justification form before procuring these services.
 - *Because we questioned these costs in Finding 5, we are not questioning any costs in this finding.*

UNC did not have sufficient controls in place to ensure that it appropriately performed competitive bidding activities or completed sole-source justification forms before hiring vendors to perform services or provide equipment. Further, UNC’s Purchasing Services consistently used waiver-of-competition forms, which were not signed because “it is not Purchasing policy for the purchasing agent to sign the form,” to justify the selection of vendors rather than appropriately performing competitive bidding activities. As a result, we are questioning \$35,578 in equipment and service costs that UNC paid to vendors under contracts that UNC did not appropriately competitively bid or sole-source. As illustrated in Table 7, UNC agreed with \$5,143 of the questioned costs and disagreed with \$30,435.

Table 7. Goods and Services Not Appropriately Procured

Description	NSF Award No.	Fiscal Year	Questioned Costs			UNC Agreed to Reimburse
			Direct	Indirect	Total	
August 2015 and February 2016 Equipment and Services	[REDACTED]	2016	\$8,170	\$4,248	\$12,418	\$0
May 2017 Server Costs	[REDACTED]	2017	5,143	0	5,143	5,143
September 2017 Equipment	[REDACTED]	2018	7,957	0	7,957	0
November 2017 Microscope	[REDACTED]	2018	10,060	0	10,060	0
January 2016 IT Support Services	[REDACTED]	2016	0	0	0	0
	Total		<u>\$31,330</u>	<u>\$4,248</u>	<u>\$35,578</u>	<u>\$5,143</u>

Source: Auditor summary of questioned transactions.

Recommendations

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

1. Resolve the \$30,435 in questioned costs related to inappropriately procured equipment and services for which UNC has not agreed to reimburse NSF and direct UNC to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UNC to provide support verifying that it has repaid or otherwise credited the \$5,143 in server costs for which it has agreed to reimburse NSF.
3. Direct UNC to strengthen its administrative and management procedures related to competitive bidding. Processes could include:
 - a. Providing annual training to PIs and other departmental personnel responsible for purchasing. This training should outline the requirements for competitive bidding that buyers must perform before procuring services or equipment.
 - b. Implementing a control to flag all vendors that have invoiced more than \$5,000 in services to a single funding source if UNC does not have competitive bidding documents and/or a sole-source justification form in place for the purchase.

University of North Carolina Response: UNC agreed with the questioned costs related to inappropriately procured goods charged to NSF Award Nos. [REDACTED] and [REDACTED]. However, UNC disagreed with the remaining questioned costs. Specifically:

- With regard to the \$12,418 and \$7,957 in costs charged to NSF Award Nos. [REDACTED] and [REDACTED], respectively, UNC acknowledged that it deviated from its procurement policies but stated that it believes these costs should be allowable because in each case, only one vendor was available to perform the services or provide the specific equipment purchased.
- With regard to the \$10,060 in costs charged to NSF Award No. [REDACTED], UNC stated that it believes the costs should be allowable because the State of North Carolina allows UNC to use contracts that were competitively bid by other institutions to fulfill its competitive bidding requirements. Specifically, UNC stated that because inter-entity agreements are allowable under Federal regulations, and because it used a competitively bid contract established by the [REDACTED] these costs should be allowable.

Auditors' Additional Comments: Our position regarding this finding has not changed. Specifically:

- With regard to the \$12,418 and \$7,957 in costs charged to NSF Award Nos. [REDACTED] and [REDACTED], respectively, although UNC noted that only one vendor was available to provide the required goods or services in each case, because the PIs failed to follow

UNC's procurement policies, these cost should not have been charged to the NSF awards and are therefore unallowable. The lack of contemporaneous documentation to support that only one vendor was available to perform the services restricts the University's and an auditor's ability to evaluate whether the costs were reasonable and not available from other sources at lower costs. As a result, our conclusion regarding this finding has not changed.

- With regard to the \$10,060 in costs charged to NSF Award No. [REDACTED], UNC purchased the microscope without first verifying that [REDACTED] competitive bidding requirements and thresholds correspond to those required by UNC. Further, the PI's justification for purchasing this unbudgeted microscope within the three months of the start the award's POP was not based on needing the microscope to achieve specific award objectives, but rather, based on the microscope being offered at a discounted price. As a result, our conclusion regarding this finding has not changed.

Finding 8: Unallowable Costs Caused by Accounting Issues

UNC charged three NSF awards for \$17,136 in unallowable costs as a result of accounting issues.⁶² Specifically:

- In April 2015, UNC charged NSF Award No. [REDACTED] for a \$15,000 accounts receivable (A/R) transaction that was associated with a cash advance the PI had requested. UNC treated this A/R transaction as an expense when calculating the amount of cash it would draw down in ACM\$ for the award. Although UNC appropriately reconciled this cash advance to the actual expenses when the traveler returned, UNC did not credit the \$15,000 A/R cash advance transaction off the award when it recorded the associated \$15,000 expense in its general ledger. As a result, UNC over-claimed travel expenses on this award by \$15,000.
 - *UNC agreed to reimburse NSF for this expense.*
- In March 2018, UNC charged NSF Award No. [REDACTED] for \$1,619 in costs incurred to purchase gift cards for human research subjects. UNC determined that these expenses were not allocable to this award during the grant's close-out period, prior to our audit; however, when UNC removed the expense from this award, it credited an account that it did not incorporate in its calculation of the total cash that it had drawn down for this award in ACM\$. As a result, UNC did not return these funds to NSF.⁶³
 - *UNC agreed to reimburse NSF for these expenses.*

⁶² According to 2 CFR 220, Appendix A, Section C and 2 CFR §200.403, costs must be necessary and reasonable for the performance of the Federal award and must be determined in accordance with generally accepted accounting principles to be allowable.

⁶³ According to 2 CFR §200.305, advance payments to a non-Federal entity must be limited to the minimum amounts needed and must be timed to be in accordance with the actual, immediate cash requirements of the non-Federal entity in carrying out the purpose of the approved program or project.

- In July 2015, UNC charged NSF Award No. [REDACTED] for \$14,238 in travel expenses, rather than the \$13,803 the PI had requested. This issue was the result of an error in the wire transfer process. As a result, UNC overcharged the NSF award by \$547.⁶⁴
 - *UNC agreed to reimburse NSF for these expenses.*
- UNC charged NSF Award No. [REDACTED] for a total of \$743,905 and NSF Award No. [REDACTED] for a total of \$252,302 over the course of the awards' POPs; however, UNC's general ledger supported total costs of \$701,094 and \$295,143, respectively. Because the discrepancy for NSF Award No. [REDACTED] was \$42,811 and the discrepancy for NSF Award No. [REDACTED] was \$(42,841), the discrepancies appear to have been caused by transposition errors made when drawing between the similarly structured NSF award numbers. Because UNC made these draws in error, it should refund these costs to NSF.⁶⁵
 - *UNC agreed to reimburse NSF for these expenses.*

UNC did not have sufficient controls in place to ensure that personnel took appropriate actions when attempting to comply with UNC policies. Specifically, UNC did not appear to have controls in place to ensure that personnel appropriately accounted for timely travel advances, processed credits to the correct account, and processed reimbursements for the correct amount. As a result, we are questioning \$17,136 in unallowable expenses caused by errors in UNC's accounting for NSF awards. As illustrated in Table 8, UNC agreed with the \$17,136 in questioned costs.

Table 8. Unallowable Costs Caused by Accounting Issues

NSF Award No.	Fiscal Year	Questioned Costs			UNC Agreed to Reimburse
		Direct	Indirect	Total	
[REDACTED]	2015	\$15,000	\$0	\$15,000	\$15,000
[REDACTED]	2018	1,065	554	1,619	1,619
[REDACTED]	2015	434	113	547	547
[REDACTED]	2015 – 2019	0	0	42,811	42,811
[REDACTED]	2014 – 2020	<u>0</u>	<u>0</u>	<u>(42,841)</u>	<u>(42,841)</u>
		<u>\$16,499</u>	<u>\$667</u>	<u>\$17,136</u>	<u>\$17,136</u>

Source: Auditor summary of questioned transactions.

Recommendations

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

⁶⁴ We calculated this amount as follows: the \$14,237.61 charged to the NSF award less the \$13,803.24 supported by the travel advance reconciliation equals \$434.37. We then applied the 26 percent indirect cost rate to the \$434.37 discrepancy, for total questioned costs of \$547.31.

⁶⁵ NSF PAPPG 18-1, Part II, Chapter VIII, Section D.2., *Erroneous Payments* states that advances or reimbursements made in error must be refunded to NSF.

1. Direct UNC to provide support to verify that it has repaid or otherwise credited the \$17,136 of questioned costs caused by accounting issues for which it has agreed to reimburse NSF.
2. Direct UNC to strengthen its administrative and management procedures related to NSF awards. Processes could include:
 - a. Providing annual training to PIs and other departmental personnel responsible for purchasing. The training should outline the requirements for travel advances and the subsequent reconciliations.
 - b. Implementing frequent reviews of charges and credits on Federal awards and performing monthly reconciliations of ACM\$ drawdowns to UNC's general ledger.

University of North Carolina Response: UNC agreed with this finding and the associated questioned costs. It stated that since these errors occurred, it has continued to strengthen its controls and processes surrounding cash management and has created and implemented a team dedicated to supporting sponsored research cash management.

Auditors' Additional Comments: Our position regarding this finding has not changed.

Finding 9: Non-Compliance with NSF Award-Specific Terms and Conditions

UNC did not comply with NSF award-specific terms and conditions related to Graduate Research Fellowship Program (GRFP) awards or Intergovernmental Personnel Act (IPA) assignments. Specifically:

- UNC did not draw down funding awarded under NSF Award No. [REDACTED] an NSF GRFP award, in accordance with the terms and conditions established for the award. Specifically, UNC drew down and disbursed funding to GRFP students on a semester basis, rather than on the required monthly basis. As a result, the drawdowns for each student were significantly larger than were the monthly stipends⁶⁶ that UNC should have provided to the students per the award's grant terms and conditions.⁶⁷
- Between June and July 2016, UNC charged NSF Award No. [REDACTED], an NSF GRFP award, for \$9,059 in salary expenses paid to a graduate teaching assistant (GTA). The GTA was identified as a GRFP fellow during the year UNC incurred this expense; however, UNC should not have used GRFP stipend funding to pay the GTA's salary.⁶⁸
 - *UNC agreed to reimburse NSF for these expenses.*

⁶⁶ UNC distributed the then-current applicable annual stipend of \$32,000 at the end of each semester, rather than in monthly increments of \$2,666 throughout the 12-month period.

⁶⁷ According to GRFP Program Solicitations NSF 10-604, 11-582, 12-599, 13-584, 14-590, 15-597, 16-588, and 18-573, grantees were required to prorate the stipends in whole-month increments.

⁶⁸ The GRFP award does not provide funding to cover teaching appointments.

- UNC did not use the salary rate included in the IPA assignment established under NSF Award No. [REDACTED] to calculate the PI’s summer salary payment.⁶⁹ Instead, UNC calculated the rate based on the PI’s Institutional Base Salary assignment.

UNC did not have sufficient controls in place to ensure that it consistently complied with NSF award-specific terms and conditions. Specifically, UNC did not have appropriate procedures in place to ensure that it appropriately drew down funding on NSF awards that had specific draw-down/disbursement conditions, including GRFP and IPA awards. As a result, we are questioning \$9,059 in costs inappropriately drawn down from NSF. As illustrated in Table 9, UNC agreed with the \$9,059 of questioned costs.

Table 9. Non-Compliance with NSF Award-Specific Terms and Conditions

Description	NSF Award No.	Questioned Costs			
		Direct	Indirect	Total	UNC Agreed to Reimburse
GRFP Stipend Disbursement	[REDACTED]	\$0	\$0	\$0	\$0
GRFP GTA Teaching	[REDACTED]	9,059	0	9,059	9,059
IPA Salary	[REDACTED]	0	0	0	0
Total		<u>\$9,059</u>	<u>\$0</u>	<u>\$9,059</u>	<u>\$9,059</u>

Source: Auditor summary of questioned transactions.

Recommendations

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

1. Direct UNC to provide support to verify that it has repaid or otherwise credited the \$9,059 of questioned costs in inappropriately treated GRFP expenses for which it has agreed to reimburse NSF.
2. Direct UNC to update its current practices for award set-up to ensure that personnel working on the award, directly or indirectly, have knowledge of specific NSF terms and conditions that apply to special types of NSF awards.

University of North Carolina Response: UNC accepted this finding and the associated questioned costs.

Auditors’ Additional Comments: Our position regarding this finding has not changed.

⁶⁹ The IPA assignment that applied to the PI’s appointment during the summers of 2016 and 2017 established salaries of \$140,757 for January 26, 2016, through January 25, 2017, and \$142,838 for January 26, 2017, through December 29, 2017.

Finding 10: FY 2015 Effort Not Appropriately Certified

UNC did not appropriately certify its employees' FY 2015 effort in accordance with its effort-reporting policy.⁷⁰ Specifically, UNC did not complete its semi-annual effort reports approximately 45 calendar days after the end of the reporting POP. Instead, UNC issued its annual certifications for FY 2015 effort on February 28, 2016, approximately 8 months after FY 2015 ended. UNC changed financial systems in October 2014 and was therefore unable to create its usual effort reports. Further, UNC's new human resources application did not recognize FY 2015 payroll cost transfers that related to payroll expenses originally recorded in UNC's legacy accounting system. As a result, these cost transfers did not appear in the FY 2015 effort statements.⁷¹

Although UNC did not appropriately complete these effort certifications, we are not questioning any costs associated with this finding because (i) UNC certified the sampled FY 2015 effort reports within 60 days of making the reports available, (ii) UNC certified the effort in accordance with applicable Federal criteria, and (iii) the payroll costs included in the unrecognized payroll cost transfer were allocable to the awards charged after the fact and UNC transferred the costs into the general ledger with the PI's approval. However, we are noting compliance exceptions, as the FY 2015 effort reports did not always reasonably reflect all activities for which the employee received compensation during the year and UNC did not perform the FY 2015 effort certifications on a timely basis or in accordance with UNC policies and procedures, as summarized in Table 10.

⁷⁰ UNC Policy 600.5, *Effort Reporting*, states that the pre-review period for effort statements begins approximately 45 calendar days from the end of the effort reporting POP (i.e., December 31 and June 30) and lasts for approximately two weeks. The UNC certification period lasts 60 calendar days and commences immediately after the pre-review period ends. Certifiers have 30 calendar days to confirm their effort after the pre-review period ends and before the escalation process commences.

⁷¹ According to 2 CFR 220, Appendix A, Section J.10.b.(2)(a) and 2 CFR §200.430, salaries and wages must be based on records that accurately reflect all work performed by an employee.

Table 10. FY 2015 Effort Not Appropriately Certified

NSF Award No.	Compliance Issue Identified
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Certified In Accordance with UNC’s Effort Reporting Policy
[REDACTED]	FY 2015 Effort Not Always Included in FY 2015 Effort Reports

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

Recommendations

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

1. Direct UNC to strengthen its administrative and management procedures related to the processing and certification of effort. Processes could include frequent monitoring of effort-report processing and certifications, as well as additional communication when standard processes are interrupted.

University of North Carolina Response: UNC agreed with this finding. It noted that these errors occurred during its October 2014 system conversion and stated that “all effort certifications have been completed timely and in accordance with University policy.”

Auditors’ Additional Comments: Our position regarding this finding has not changed.

Finding 11: Incorrect Application of Proposed Indirect Cost Rates

UNC applied incorrect indirect cost rates to direct expenses accumulated on 28 NSF awards. For each of these awards, UNC applied the NICRA rate that was in effect at the time it submitted the award proposal, rather than the rate that was in effect as of the date of award, contrary to applicable Federal⁷² and NSF guidance.⁷³ As a result, UNC applied indirect costs at rates that

⁷² According to 2 CFR 220, Appendix A, Section G.7.a. and 2 CFR Part 200, Appendix III, Section C.7, when identifying and computing indirect costs at Institutions of Higher Education (IHE), Federal agencies must use the negotiated rates in effect at the time of the initial award throughout the life of the award.

⁷³ NSF also requires IHEs to use the negotiated indirect cost rate in effect at the time the award was made throughout the life of the award. See NSF PAPPs 11-1, 13-1, 14-1, 15-1, 16-1, and 17-1, and 18-1 Part I, Chapter II, Section C.2.g.(viii).

were lower than the approved NICRA rates based on the dates that NSF awarded the grants to UNC, as summarized in Table 11.

Table 11. Incorrect Application of Proposed Indirect Cost Rates

NSF Award No.	Award Date	Appropriate Rate	Rate Applied
	9/7/2011	52%	48%
	9/19/2011	52%	48%
	9/9/2011	36%	33.80%
	8/29/2011	52%	48%
	3/8/2012	52%	48%
	9/7/2011	52%	48%
	7/16/2012	52%	48%
	4/5/2012	52%	48%
	8/29/2012	52%	48%
	8/29/2011	52%	48%
	6/20/2012	52%	48%
	5/7/2012	52%	48%
	4/13/2012	52%	48%
	11/29/2011	52%	48%
	2/22/2013	52%	48%
	8/31/2012	52%	48%
	8/13/2012	52%	48%
	7/27/2012	52%	48%
	8/9/2016	55.50%	52%
	8/31/2016	55.50%	52%
	9/8/2016	55.50%	52%
	7/21/2016	11.11%	10%
	7/6/2016	55.50%	52%
	9/8/2016	55.50%	52%
	2/9/2017	55.50%	52%
	4/5/2017	55.50%	52%
	8/8/2017	52%	48%
	6/26/2017	55.50%	52%

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

This issue did not result in any questioned costs; however, UNC’s treatment of indirect cost rates was not consistent with Federal regulations. Without policies and procedures in place to ensure that UNC uses the correct indirect cost rate, it is possible that UNC 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 UNC to update its current practices for award set-up to ensure that personnel set up accounts for NSF awards such that the account applies indirect costs at the rates in

effect as of the awarding date of the NSF award, rather than using the rates included in the original grant proposal.

University of North Carolina Response: UNC did not agree with this finding. Specifically, UNC stated that it believes its choice to use the lower indirect cost rates included within its proposals is allowable under the Uniform Guidance. UNC noted that, although the rates that it applied differed from the rates that were in effect at the beginning of the award's POP, the Uniform Guidance Frequently Asked Questions (FAQ) published in July 2017 states that Federal agencies may allow non-Federal entities to waive indirect cost rates or lower the rates applied.

Auditors' Additional Comments: Our position regarding this finding has not changed. Specifically, 2 CFR §200, Appendix III, C.7 states that Federal agencies must use the negotiated rates in effect at the time of the initial award throughout the life of the award, except as provided in paragraph I (1) of §200.414, which states that Federal agencies may use a rate that differs from the negotiated rate only when required by Federal statute or when approved by a Federal awarding agency. Further, for proposals accepted and awarded after January 30, 2017, the NSF PAPPGs⁷⁴ state that the "use of an indirect cost rate lower than the organization's current negotiated indirect cost rate is considered a violation of NSF's cost sharing policy." Because NSF did not approve either the use of an indirect cost rate that was lower than the NICRA or the use of cost-sharing on this award, UNC should have used the rate in effect at the time of the initial award.

Finding 12: Non-Compliance with UNC Policies and Procedures

UNC either did not comply with its internal policies and procedures when incurring costs charged to NSF awards or did not provide support demonstrating its compliance. Because these instances of non-compliance did not directly result in UNC charging unallowable costs to NSF awards, we are only noting compliance exceptions for these issues.

Non-Compliance with UNC Consultant/Independent Contractor Policies

We identified four instances, related to three payments, in which UNC did not comply with its consultant/independent contractor policies. Specifically:

- In March 2015, UNC entered into an agreement with a consultant under NSF Award No. [REDACTED]; however, UNC did not complete an independent contractor determination form for the consultant before obtaining the services.⁷⁵

⁷⁴ This language initially appeared in NSF PAPPG 17-1 Chapter II, Section C.2 (g) (viii) and is included in the same location in NSF PAPPGs 18-1, 19-1, and 20-1.

⁷⁵ UNC Policy 708, *UNC Policy on Independent Contractor*, states that the determination that an individual is an independent contractor is to be made prior to the individual's performance of service and that originating departments are to seek confirmation of independent contractor status from Accounts Payable prior to making any employment commitment or preparing any payment vouchers.

- In May 2017, UNC entered into an agreement with a consultant under NSF Award No. [REDACTED]; however, UNC did not provide support verifying that the PI had approved the consultant's invoice before OSR paid the invoice, as required by UNC policy.⁷⁶
- In June 2018, UNC entered into an agreement with a consultant under NSF Award No. [REDACTED]; however, UNC (i) did not complete an independent contractor determination form for this consultant before obtaining the services, and (ii) did not provide support verifying that the PI approved the consultant's invoice prior to payment.

Non-Compliance with UNC Cost Transfer Policies

We identified five instances, related to three payments, in which UNC did not comply with its cost transfer policies.⁷⁷ Specifically:

- In June 2017, UNC processed a cost transfer to move \$4,911 in travel expenses that had originally been invoiced in June 2016 to NSF Award No. [REDACTED]. In addition to the costs not being allocable to this award (see Finding 5), UNC did not provide the original documentation and justification for this cost transfer.
- In March 2018, UNC processed a cost transfer to move \$4,260 in computer expenses that the vendor had originally invoiced in August 2016 from the original funding source to NSF Award No. [REDACTED]. In addition to the costs not being allocable to this award (see Finding 5), UNC (i) did not process the cost transfer within 90 days of incurring the original expense, and (ii) did not provide cost transfer documentation that contained a justification stating why the error occurred, how the expense related to the project being charged, and how UNC planned to prevent similar errors in the future.
- In August 2018, UNC processed a cost transfer to remove \$9,385 of salary expenses that it had originally incurred in June 2018 from NSF Award No. [REDACTED] to another funding source; however, UNC (i) did not process the cost transfer within 30 days after the end of the effort certification period, and (ii) did not provide evidence that OSR approved the cost transfer, or that the transfer was supported by the appropriate documentation/justification.⁷⁸

⁷⁶ UNC Policy 500.12, *Consultants*, states that PIs are required to review and sign each invoice to indicate approval of the expenditures before forwarding the invoice to OSR for payment processing.

⁷⁷ UNC Policy 500.20, *Cost Transfers*, states that non-salary cost transfers must be completed within 90 days from the date the transaction is charged. Moreover, cost transfers must be supported by documentation that contains a justification stating why the error occurred, how the expense relates to the project being charged, and a plan to prevent similar errors in the future.

⁷⁸ UNC Policy 500.20, *Cost Transfers*, states that salary cost transfers must be completed within 30 days after the end of the effort certification period.

Non-Compliance with UNC Subaward Policies

We identified 13 instances, related to 9 payments, in which UNC did not comply with its subaward policies related to debarment/suspension,⁷⁹ PI approval,⁸⁰ annual certification,⁸¹ subrecipient commitment forms,⁸² and risk assessments.⁸³ Specifically:

- In August 2011, UNC entered into a subaward agreement with [REDACTED] University under NSF Award No. [REDACTED]; however, UNC did not verify that the subawardee had not been debarred or suspended before issuing the subaward or making payments for invoices submitted.
- In July 2012, UNC entered into a subaward agreement with [REDACTED] University under NSF Award No. [REDACTED]; however, UNC did not verify that the subawardee had not been debarred or suspended before issuing the subaward or making payments for invoices submitted.
- In September 2012, UNC entered into a subaward agreement with [REDACTED] University under NSF Award No. [REDACTED]; however, UNC (i) did not verify that the subawardee had not been debarred or suspended before issuing the subaward or making payments for invoices submitted, and (ii) did not provide support verifying that the PI had approved the subawardee's invoice before OSR paid the invoice.
- In July 2014, UNC entered into a subaward agreement with the University [REDACTED] under NSF Award No. [REDACTED]; however, UNC (i) did not verify that the subawardee had not been debarred or suspended, (ii) did not send out the annual certification letter, and (iii) did not complete the subrecipient commitment form before issuing the subaward or making payments for invoices submitted.

⁷⁹ UNC Policy 500.11, *Outgoing Subcontracts*, states that UNC assumes responsibility for providing proper oversight of sub-recipients to meet monitoring requirements. These requirements include ensuring that sub-recipients are not debarred or suspended and are eligible to receive Federal funds.

⁸⁰ UNC Policy 500.11, *Outgoing Subcontracts*, states that all subcontract invoices should be directed to the PI for approval. The signature of the PI constitutes satisfactory performance and adherence to the subcontract agreement and budget.

⁸¹ UNC Policy 500.11, *Outgoing Subcontracts*, states that in order to comply with Office of Management and Budget (OMB) Circular A-133, OSR prepares annual certification letters and distributes the letters to every sub-recipient working on an externally sponsored award.

⁸² UNC Policy 500.11, *Outgoing Subcontracts*, states that a potential subrecipient should complete a subrecipient commitment form before UNC issues a subaward agreement.

⁸³ UNC Policy 500.11, *Outgoing Subcontracts*, states that UNC should ensure that it has identified and managed any risks associated with a subrecipient before it issues a subaward agreement.

- In September 2014, UNC entered into a subaward agreement with ██████ University under NSF Award No. ██████; however, UNC did not provide support verifying that the PI approved the subawardee’s invoice before OSR paid the invoice.
- In October 2015, UNC entered into a subaward agreement with the University ██████ under NSF Award No. ██████; however, UNC did not complete the subrecipient commitment form before issuing the subaward or making payments for invoices submitted.
- In October 2015, UNC entered into a subaward agreement with ██████ University under NSF Award No. ██████; however, UNC (i) did not verify that the subawardee had not been debarred or suspended, and (ii) did not complete a risk assessment before issuing the subaward or making payments for invoices submitted.
- In November 2016, UNC entered into a subaward agreement with ██████ College under NSF Award No. ██████; however, UNC (i) did not verify that the subawardee had not been debarred or suspended, and (ii) did not complete a risk assessment before issuing the subaward or making payments for invoices submitted.
- In September 2017, UNC entered into a subaward agreement with ██████ University under NSF Award No. ██████; however, UNC did not complete a risk assessment before issuing the subaward or making payments for invoices submitted.

Non-Compliance with UNC Travel Policies

We identified 31 instances in which UNC employees did not comply with UNC’s travel policies. Specifically:

- We identified 16 instances in which UNC did not demonstrate that the agency head (i.e., the Chancellor) or the Chancellor’s delegate had appropriately authorized business travel taken by UNC employees, as required by UNC policy.⁸⁴
- We identified four instances in which employees did not submit travel reimbursement requests within the required time period after completing travel.⁸⁵
- We identified four instances in which travelers submitted travel reimbursement requests without including a cover page on which the traveler certified that the request was true and accurate.⁸⁶

⁸⁴ UNC Policy 1303, *Authorization for University Travel*, states that all travel by UNC employees on UNC business must be authorized by the agency head (i.e., the Chancellor) or the Chancellor’s delegate.

⁸⁵ The “Reimbursements” section of UNC’s Finance Glossary states that travelers must file all reimbursement requests for approval and payment within 10 days after the travel period related to the reimbursement.

⁸⁶ UNC Policy 1301, *University Business Travel*, states that all UNC travel advance/reimbursement requests must be certified as true and accurate by the traveler. To accomplish this, the traveler must personally sign and date a cover page accompanying the travel request. UNC will deem any request missing the traveler’s signature to be incomplete and will not process the request.

- We identified two instances in which UNC reimbursed travelers that did not submit formal reimbursement requests.⁸⁷
- We identified two instances in which a traveler used third-party lodging⁸⁸ without requesting or obtaining approval for this lodging before performing the grant-related travel.⁸⁹
- We identified one instance in which UNC approved a non-employee's travel reimbursement without first obtaining a signed Student, Non-Employee Travel Agreement form.⁹⁰
- We identified one instance in which UNC issued a cash advance agreement for a UNC employee without prior approval from OSR.⁹¹
- We identified one instance in which UNC did not use the appropriate meal per diem rate when reimbursing the traveler.⁹²
 - *We are questioning the costs related to this instance in Finding 4.*

Non-Compliance with UNC Procurement Policies

We identified 12 instances in which UNC did not appropriately complete competitive bidding requirements or the waiver-of-competition forms required to support that it had appropriately performed sole-source procurements.⁹³ Specifically:

- In January 2015, UNC incurred \$709,243 in equipment costs to purchase a Nikon microscope and charged approximately 70 percent of the expense to NSF Award No. [REDACTED]. Although the purpose of this award was to purchase this camera, UNC did not perform competitive bidding activities or complete a sole-source justification form before

⁸⁷ UNC Policy 1301, *University Business Travel*, states that in order to comply with auditing guidelines, all university travel advance/reimbursement requests must be certified as true and accurate by the traveler.

⁸⁸ Per UNC Policy 1305, *Third Party Lodging*, third-party lodging refers to the use of lodging in an apartment or home rather than a hotel or motel.

⁸⁹ UNC Policy 1305, *Third Party Lodging*, states that each applicant must provide a completed Request for Third Party Lodging form to the approving party before the party may grant approval for payment or reimbursement. Before the request is forwarded to Travel Services, the Chancellor or the Chancellor's designee must approve the request. Further, according to UNC's Non-Hotel Lodging Authorization Request form (form 1305.1.1f), "It is required that Travel Services authorize any request for Lodging in a Third Party Establishment PRIOR to your trip."

⁹⁰ UNC Policy 1301.2, *Reimbursing Student, Non-Employee Travel*, states that the department's dean, director, or department head must certify non-employee travel, and that a signed Student, Non-Employee Travel Agreement form must be attached to the travel reimbursement for UNC to reimburse the student for the expenses.

⁹¹ The UNC Cash Advance Agreement (Form 307.1.2f), revised November 10, 2014, required a certification from the employee, the award's PI, and OSP; however, OSP did not approve the form.

⁹² UNC Policy 1302, *Statutory Provisions and Maximum Rates for Travel*, states that meal expenses are an allowance and may not exceed the per diem amounts determined by the North Carolina General Assembly.

⁹³ UNC Policy 1232.1, *Procedure on Justifying Sole Source or Brand-Specific Purchases*, states that requisitions in excess of \$5,000 that designate only one vendor, brand, or model as being capable of fulfilling the requestor's needs must be accompanied by a justification memorandum that includes a waiver-of-competition form.

ordering the equipment. UNC stated that it instead relied on a “competitively bid contract that [REDACTED] did for camera equipment.”

- In August 2015, UNC charged NSF Award No. [REDACTED] for \$22,500 in costs incurred to produce a grant-related video. Although only one vendor was able to produce the video, UNC did not complete a sole-source justification form before procuring and receiving the services.⁹⁴
- In March 2017, UNC charged NSF Award No. [REDACTED] for \$16,200 in analytical services invoiced by the University [REDACTED]. Although UNC identified the University [REDACTED] in the grant budget, UNC did not perform competitive bidding activities or complete a sole-source justification form before procuring and receiving the services.⁹⁵
- We identified nine awards for which UNC purchasing agents did not sign waiver-of-competition forms and justification memoranda for all purchases exceeding \$5,000.⁹⁶

Non-Compliance with Other UNC Policies

We identified six instances in which UNC did not comply with other UNC policies. Specifically:

- In September 2014, UNC charged NSF Award No. [REDACTED] for \$1,656 in computer and data-processing service fees invoiced by UNC’s Computer Services Recharge Center (CSRC) using a service rate of \$585, rather than the \$621 service rate supported by the CSRC’s billing rate sheet.⁹⁷
- In August 2015, UNC capitalized \$68,573 in direct costs incurred for NSF Award No. [REDACTED] to purchase a 1-year service contract as equipment costs instead. Although the vendor included these costs on the same invoice as the equipment purchase, because the service contract was for equipment maintenance,⁹⁸ UNC should not have capitalized the \$68,573 as part of the cost of the equipment.
- In December 2015, UNC charged NSF Award No. [REDACTED] for a \$14,526 payment to an engineer who spent 289 hours on grant-related activities. The engineer certified that his effort during this period benefited the NSF award charged; however, UNC did not require

⁹⁴ UNC retroactively completed a sole-source justification form that supported that the vendor used was the “only authorized video vendor for the conference.”

⁹⁵ UNC relied on the NSF grant budget, which requested funding for the University [REDACTED] to provide the services, as support that it had appropriately procured the services.

⁹⁶ UNC waiver-of-competition forms contain signature blocks for the purchasing agent to certify that they had approved the waiver; however, the purchasing agent often did not complete these signature blocks.

⁹⁷ Per UNC’s [CSRC website](#) and the CSRC rate sheet, this recharge center developed a rate of \$621 per full-time equivalent per month, effective January 1, 2015.

⁹⁸ UNC Policy 601, *Policy on Definition of Capital Equipment*, states that equipment maintenance contracts do not qualify as capital assets.

the engineer to complete timecards within its timekeeping system to support the actual number of hours he spent performing grant-related activities.⁹⁹

- In September 2017, UNC charged NSF Award No. [REDACTED] for \$2,898 in rental costs related to a research space; however, UNC did not address this rental on an internal processing form, nor did the University Property Office arrange and contract for the rental, as required by UNC policy.¹⁰⁰
- In July 2018, UNC charged NSF Award No. [REDACTED] for \$1,760 in publication expenses charged to a purchasing card but did not maintain original documentation, such as a receipt or invoice, to support the nature of the expense or the title of the article published.¹⁰¹
- UNC did not properly apply indirect costs to the first \$25,000 of subaward costs invoiced by the University [REDACTED] for work that it performed under NSF Award No. [REDACTED]. Although the University [REDACTED] had invoiced more than \$25,000 in subaward costs in April 2016, UNC only applied indirect costs to \$15,971¹⁰² in subaward costs that the University [REDACTED] invoiced between August 2016 and May 2017.¹⁰³

The compliance issues alone did not result in any questioned costs; however, UNC did not have sufficient policies or procedures in place to ensure that it consistently complied with its internal policies and procedures. We are therefore noting 72 instances of non-compliance with UNC policies. UNC agreed with 70 of the compliance issues identified, as summarized in Table 12.

Table 12. Non-Compliance with UNC Policies and Procedures

NSF Award No.	Compliance Issue Identified	UNC Accepted Finding
[REDACTED]	Late Determination of Independent Contractor	Yes
[REDACTED]	Lack of PI Approval Prior to Payment of Invoice	Yes
[REDACTED]	Late Determination of Independent Contractor	Yes
[REDACTED]	Lack of PI Approval Prior to Payment of Invoice	Yes
[REDACTED]	Lack of Cost Transfer Justification	Yes
[REDACTED]	Lack of Cost Transfer Justification	Yes

⁹⁹ UNC uses a Time Information Management System as its official time-capturing system to track time worked; however, this employee’s hours were not tracked within the system; instead, UNC supported the hours using e-mails that the engineer sent between June and November.

¹⁰⁰ UNC Policy 500.15, *Additional Non-Personnel Expenditures*, states that, regardless of the funding source, all anticipated space rental should be addressed on the internal processing form and must be arranged and contracted for by the University Property Office.

¹⁰¹ UNC Policy 1252.2, *Procedure on Using a Purchasing Card*, states that individuals will be required to support purchasing card expenses with invoices and that original receipts should be maintained for five years; however, UNC was only able to provide a credit card statement to support this expense. Because we were able to verify that Nature America had published an article that identified NSF Award No. [REDACTED] as a research sponsor 1 week after UNC incurred this expense, we did not question any costs associated with this exception.

¹⁰² As of the end of our audit period, UNC had only charged NSF for \$8,305 of the \$13,000 in indirect costs that UNC should have applied to this subaward.

¹⁰³ UNC established an account titled “Subcontracts-Less than \$25k” to accumulate the first \$25,000 of expenses invoiced under each subaward to ensure that it appropriately applies its NICRA rate to subaward costs.

NSF Award No.	Compliance Issue Identified	UNC Accepted Finding
	Late Non-Salary Cost Transfer	Yes
	Lack of Cost Transfer Justification	Yes
	Late Salary Cost Transfer	Yes
	Late Debarment/Suspension Check	Yes
	Late Debarment/Suspension Check	Yes
	Late Debarment/Suspension Check	Yes
	Lack of PI Approval Prior to Payment of Invoice	Yes
	Late Debarment/Suspension Check	Yes
	Did Not Send Subawardee Annual Certification Letters	Yes
	Subaward Issued Prior to Completion of Subrecipient Commitment Form	Yes
	Lack of PI Approval Prior to Payment of Invoice	Yes
	Subaward Issued Prior to Completion of Subrecipient Commitment Form	Yes
	Late Debarment/Suspension Check	Yes
	Subaward Issued Prior to Completion of Risk Assessment	Yes
	Late Debarment/Suspension Check	Yes
	Subaward Issued Prior to Completion of Risk Assessment	Yes
	Subaward Issued Prior to Completion of Risk Assessment	Yes
	Unauthorized Travel	Yes
	Late Submission of Reimbursement Requests	Yes
	Late Submission of Reimbursement Requests	Yes
	Late Submission of Reimbursement Requests	Yes
	Late Submission of Reimbursement Requests	Yes
	Reimbursement Requests Lacking Cover Pages	Yes
	Reimbursement Requests Lacking Cover Pages	Yes
	Reimbursement Requests Lacking Cover Pages	Yes
	Reimbursement Requests Lacking Cover Pages	Yes
	Lack of Formal Reimbursement Requests	Yes
	Lack of Formal Reimbursement Requests	Yes
	Unapproved Third-Party Lodging	Yes
	Unapproved Third-Party Lodging	Yes

NSF Award No.	Compliance Issue Identified	UNC Accepted Finding
	Lack of a Student, Non-Employee Travel Agreement Form	Yes
	Unapproved Cash Advance Agreement	Yes
	Inappropriate Meal Per Diem Rate	Yes
	Competitive Bidding Not Performed by UNC	No
	Sole Source Procurement Completed After Services were Provided	No
	Reliance on NSF Grant Budget to Support Sole Source Procurement	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Waiver of Competition Form Not Signed	Yes
	Incorrect Service Center Rate Billed	Yes
	Service Contract Costs Inappropriately Capitalized	Yes
	Time Cards Not Completed	Yes
	Inappropriately Addressed/Processed Rental Expense	Yes
	Original Receipts Not Maintained	Yes
	Indirect Costs Not Appropriately Applied to a Subaward	Yes

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

Recommendations

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

1. Direct UNC to strengthen the administrative and management policies and procedures in place related to establishing agreements with, and making payments to, contractors and consultants. Updated procedures could include:
 - a. Implementing a control to prevent UNC from entering into contracts to support grant-related research without first submitting all required forms and performing all necessary suspension/debarment checks.
 - b. Updating its procedures to ensure that it cannot approve contractor/consultant invoices until the PI has physically documented their approval.
2. Direct UNC to strengthen its policies and procedures related to the creation and retention of documentation, including introducing additional controls to help ensure that UNC appropriately creates and maintains all documentation necessary to support the allowability of cost transfers. Updated procedures could include requiring periodic training for PIs and other appropriate personnel responsible for submitting and processing cost transfers.

3. Direct UNC to strengthen its policies and procedures related to establishing and monitoring subawards. Procedures could include:
 - a. Establishing procedures that require the authorizing agent to verify that a subawardee is not suspended or debarred, that UNC completed the subrecipient commitment form, and that UNC appropriately performed a risk assessment before authorizing a subaward agreement.
 - b. Implementing additional controls to ensure the departments do not approve subaward invoices that have not been approved by a PI.
 - c. Providing periodic training to employees responsible for subaward monitoring to ensure that employees are performing and appropriately documenting all required monitoring.
 - d. Performing periodic reviews of the accounts that UNC has established for tracking subawards to ensure that UNC charges the first \$25,000 of expenses under each subaward to the “Subcontracts-Less than \$25k” account.
4. Direct UNC to strengthen its policies and procedures related to approving travel expense reports. Updated procedures could include:
 - a. Requiring periodic training for PIs and other personnel responsible for incurring travel costs that may be charged to sponsored awards.
 - b. Implementing a control to prevent personnel from submitting expense reports outside the 10-day allowable period without justification and specific approval.
 - c. Requiring personnel to provide expense report cover pages and justifications to support why the individual did not obtain the required prior approvals before they are able to submit their travel expense reports.
5. Direct UNC to issue clarifying guidance regarding its competitive bidding and sole-source justification requirements. The clarifying guidance should address:
 - a. When UNC can rely on contracts competitively bid by other organizations, including how UNC verified that the competitive bidding performed was appropriate.
 - b. How Procurement must document that it complied with competitive bidding or sole-source requirements when vendors are specifically identified within a federally approved budget.
 - c. When and how a purchasing agent must document that it has approved a sole-source justification form, including the waiver-of-competition.

6. Direct UNC to strengthen its administrative and management processes and procedures surrounding the internal service center billing process. Updated procedures should ensure that internal service centers bill for the services provided using the recharge rates the centers developed in accordance with Federal policies.
7. Direct UNC to provide periodic training to personnel responsible for capitalizing equipment to ensure that personnel do not capitalize items that do not qualify as capital assets.
8. Direct UNC to strengthen its administrative and management processes and procedures surrounding the payment of hourly employees. Updated procedures could include:
 - a. Requiring that all hourly employees complete timesheets that support the number of hours of work performed and the project(s) to which the work related.
 - b. Updating UNC's hiring processes to require that all hourly employees be provided with hourly non-exempt appointments that clearly state the rate at which UNC will pay the employee.

University of North Carolina Response: UNC agreed with the findings related to non-compliance with consultant, cost transfer, subaward, travel, and other policies, as well as with the majority of the findings related to non-compliance with procurement policies. UNC noted that it has changed a number of its previous policies and procedures to ensure that it appropriately complies with its policies in the future. However, UNC disagreed with 2 of the 72 compliance exceptions included in this finding. Specifically:

- As noted in its response to Finding 7, UNC disagreed that it did not appropriately perform competitive bidding procedures when purchasing equipment under NSF Award No. [REDACTED] because [REDACTED] had competitively bid the contract.
- Although UNC acknowledged that it deviated from its procurement policy when obtaining the video services charged to NSF Award No. [REDACTED], it disagrees with the compliance exception because it completed a sole-source justification form for the procurement.

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

- With regard to the equipment that UNC charged to NSF Award No. [REDACTED], because UNC did not verify that [REDACTED] competitive bidding requirements and thresholds were consistent with its own, our conclusion regarding this finding has not changed.
- With regard to the video services charged to NSF Award No. [REDACTED], because UNC did not complete the sole-source form during the requisition process as required by its policy, our conclusion regarding this finding has not changed.

COTTON & COMPANY LLP



Michael Gillespie, CPA, CFE
Partner
July 7, 2020

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING

NATIONAL SCIENCE FOUNDATION
ORDER # 140D0418F0493
PERFORMANCE AUDIT OF COSTS CLAIMED ON NSF AWARDS
UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Questioned Costs		Total
		Unsupported	Unallowable	
1	Inadequately Supported Expenses	\$0	\$175,413	\$175,413
2	NSF Approval Not Obtained Before Transferring Award Research to Other Organizations	0	164,313	164,313
3	Unsupported ACM\$ Draws	0	103,250	103,250
4	Inappropriately Allocated Expenses	0	88,001	88,001
5	Unallowable Expenses	0	86,607	86,607
6	Indirect Costs Not Appropriately Applied	0	65,314	65,314
7	Goods and Services Not Appropriately Procured	0	35,578	35,578
8	Unallowable Costs Caused By Accounting Issues	0	17,136	17,136
9	Non-Compliance with NSF Award-Specific Terms and Conditions	0	9,059	9,059
10	FY 2015 Effort Not Appropriately Certified	0	0	0
11	Incorrect Application of Proposed Indirect Cost Rates	0	0	0
12	Non-Compliance with UNC Policies and Procedures	0	0	0
Total		<u>\$0</u>	<u>\$744,671</u>	<u>\$744,671</u>

APPENDIX B: UNIVERSITY OF NORTH CAROLINA, CHAPEL HILL RESPONSE



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

OFFICE OF THE VICE CHANCELLOR FOR RESEARCH

OFFICE OF SPONSORED RESEARCH
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CHAPEL HILL, NC 27599-1350

May 26, 2020

Cotton & Company, LLP
Attn: Michael Gillespie, CPA, CFE – Partner
635 Slaters Lane, 4th Floor
Alexandria, VA 22314

Dear Mr. Gillespie,

The University of North Carolina at Chapel Hill (UNC) appreciates the opportunity to work with the National Science Foundation Office of Inspector General (NSF OIG) to examine its research accounting practices. UNC takes very seriously its obligation to administer NSF awards in compliance with all applicable laws, policies, and requirements. As such, UNC welcomes recommendations and opportunities to improve its research accounting practices and is committed to continuing to enhance policies and procedures surrounding its research accounting practices.

In the following response, UNC addresses the Draft Audit Report's findings and recommendations and explains why it agrees, or disagrees, with the auditors' position. We have also included as an Exhibit to this response a chart laying out our position on each of the sampled transactions.¹

FINDING 1: INADEQUATELY SUPPORTED EXPENSES

1.1 Inadequately Supported Travel Costs

UNC accepts the findings related to NSF Award [REDACTED]. UNC does not agree with the other transactions questioned as inadequately supported travel costs, as set forth below.

1.1.1 September 2015 Conference Expenses, NSF Award [REDACTED] (\$11,800); August 2016 Conference Expenses, NSF Award [REDACTED] (\$15,595)

UNC does not agree with these findings. The travel expenses in question were paid as stipends to participants and were budgeted, proposed, and approved by NSF as participant support costs. Because these costs were paid via a stipend and the stipend amount was approved in advance by NSF, detailed documentation for specific travel expenses was not required.

¹ This response addresses in detail certain of the Draft Audit Report's findings with which we disagree. The Exhibit identifies additional findings with which we disagree but have not discussed in detail in this response; we reserve our right to challenge those findings during the audit resolution process.

The proposal budget justification for both awards specifically provide for the payment of stipends, on a sliding scale, to student participants based on the circumstances of the specific student. The University anticipated that stipend amounts would average \$1,000 per participant to cover travel, food, lodging, and registration costs. The Draft Audit Report acknowledges that the University's records identify the total amount of stipends provided to each student and the portion of each stipend associated with travel expenses. The Draft Audit Report also recognizes that the total amount of stipends was in accordance with the overall participant support cost amount in the approved budget. As documented in 2 CFR 200.75, travel allowances for participants are considered part of Participant Support Costs. Accordingly, UNC did not track specific travel expenses for the students, nor was it required to do so.

The University acknowledges that \$1,200 in excess expenses was charged to NSF. These funds have already been returned.

With the exception of the \$1,200, UNC does not agree with this finding and believes the remaining questioned stipend expenses are reasonable, allowable and allocable.

1.1.2 February – June 2018 [REDACTED] Travel Expenses, NSF Award [REDACTED] (\$72,281)

UNC provided documentation to support \$44,787 of these questioned expenses. The documented expenses should be accepted.

The expenses were consistent with the costs identified in the proposal budget justification, directly benefited the project goals identified in the proposal project summary, and were supported by receipts and other supporting documentation.

1.2 Inadequately Supported External Service Expenses

1.2.1 June 2015 – August 2016 AURA Services, NSF Award [REDACTED] (\$37,548)

UNC does not agree with this finding. One of the primary purposes of this award was to cover operational costs related to housing and maintaining the [REDACTED] telescope. The [REDACTED] is located at the [REDACTED] in [REDACTED], which has the type of dome needed to house and operate the [REDACTED] and without which the telescope would not work and the project could not be performed. The [REDACTED] is operated by [REDACTED], [REDACTED]. This location was explicitly included in a change of scope request approved by NSF.

In order to house the [REDACTED] in the [REDACTED], UNC was required to pay [REDACTED] rental and other fees as outlined in the agreement between UNC and [REDACTED]. The rates charged under the agreement are substantially lower than those that UNC would have incurred if self-funding the dome location and associated operational costs. Moreover, the expenses incurred were necessary to operate the [REDACTED] and are therefore allowable on this award. And, notably, the [REDACTED] expenses were included in the proposal budget justification accepted by NSF and [REDACTED] submitted invoices and reports to UNC supporting the expenses.

At the time the questioned expenses were incurred, and charged to the project, a legally binding contract was in place between UNC and [REDACTED], established through written agreement and subsequent course of conduct of the parties. Although the initial contract between UNC and [REDACTED] by its terms,

UNC Response 2

ended on June 30, 2014, the parties continued to conduct their business as if the contract were still active and [REDACTED] confirmed the continued contractual relationship through a December 2019 letter issued to the University, thereby establishing an “implied in fact” contract. Federal courts have determined that “[w]hen an agreement expires by its terms, if, without more, the parties continue to perform as theretofore, an implication arises that they have mutually assented to a new contract containing the same provisions as the old.” *Martin v. Campanaro*, 156 F.2d 127, 129 (2d Cir. 1946). Indeed, the courts have determined further that

general principles of contract law teach us that when a contract lapses but the parties to the contract continue to act as if they are performing under a contract, the material terms of the prior contract will survive intact unless either one of the parties clearly and manifestly indicates, through words or through conduct, that it no longer wishes to continue to be bound thereby, or both parties mutually intend that the terms not survive. The rationale for this rule is straightforward: when parties to an ongoing, voluntary, contractual relationship, especially a relationship which by its nature generally implies that some mutually agreed upon rules govern its configuration, continue to behave as before upon the lapse of the contract, barring contrary indications, each party may generally reasonably expect that the lapsed agreement’s terms remain the ones by which the other party will abide.

Luden's Inc. v. Local Union No. 6 of Bakery, Confectionery & Tobacco Workers' Int'l Union of Am., 28 F.3d 347, 355–56 (3d Cir. 1994). Those principles are especially germane to this transaction because the [REDACTED] contract provides that the agreement can be extended “on terms mutually agreed upon by the parties.”

Given the conduct of the parties in this instance, there was a legally binding contract in place with the same terms as the original contract when the questioned costs were incurred by [REDACTED] in support of the NSF project. Accordingly, these expenses are allowable.

1.3 Inadequately Supported Internal Service Center Costs, Various NSF Awards
Inadequately Supported Salary Costs, NSF Award [REDACTED]
Inadequately Supported Other Direct Costs, NSF Awards [REDACTED], [REDACTED]

UNC accepts these findings.

FINDING 2: NSF APPROVAL NOT OBTAINED BEFORE TRANSFERRING AWARD RESEARCH TO OTHER ORGANIZATIONS

2.1 UW Subaward, NSF Award [REDACTED] (\$111,911)

UNC does not agree with this finding. After issuance of the award, the named PI moved to the University [REDACTED]. In May 2013, UNC submitted to NSF a request to (a) change the PI to a different UNC faculty member due to the PI’s decision to leave UNC to join [REDACTED] and (b) to enter into a subaward agreement with [REDACTED] to facilitate the PI’s continued participation in the project. The request specifically explained that the agreement with [REDACTED] was necessary to allow the former and new PI, and their students, to continue their collaboration, and provide necessary funding for students, equipment, and supplies.

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UNC submitted this formal request to change the PI and notify NSF of the need for the subaward with [REDACTED] in a single NSF Fastlane submission. The communication clearly included requests for both the PI change and the subaward. The PI transfer to [REDACTED] the UNC PI change, and the subaward issued to [REDACTED] did not result in any change in project scope and all key personnel remained the same as originally proposed. Approval of the subaward was granted via NSF email dated June 3, 2013.

The request, including the subaward to [REDACTED], was expressly approved by NSF. As such, this expense is allowable.

2.2 [REDACTED] Subaward, NSF Award [REDACTED] (\$52,402)

UNC does not agree with this finding. In 2014, the co-PI on this award left UNC and became a faculty member at [REDACTED] University [REDACTED]. UNC issued a subaward to [REDACTED] for the co-PI's continued engagement in the project at the same level of effort, with no changes to the scope of work.

Collaboration with [REDACTED] under this award was referenced in multiple progress reports and in the final report submitted to NSF. Specifically, these reports mention: the former co-PI (then PI of the subaward at [REDACTED]) teaching a semester-length course at [REDACTED] and including in that course a week on the generalized exponential random graph model (GERGM); contributions by post-docs and students at [REDACTED]; and activity by [REDACTED] Office. The former co-PI is listed in these reports with an [REDACTED] email address.

UNC believes that statements in these reports submitted to NSF about collaboration with [REDACTED] constitute notice to NSF and effective approval by NSF of the subaward. Moreover, the costs incurred by [REDACTED] and ultimately charged to the project via the subaward, were allowable costs under applicable cost principals and the work performed by [REDACTED] under the subaward clearly benefitted the overall project. As such, this expense is allowable.

FINDING 3: UNSUPPORTED ACM\$ DRAWS

UNC accepts this finding and has returned the inadvertently overdrawn funds to NSF.

UNC converted to a comprehensive enterprise financial/accounting system in October 2014. This oversight occurred as a direct result of the system conversion. However, since that time, UNC has continued to strengthen its controls and processes surrounding cash management. In addition to numerous system and process improvements, UNC Office of Sponsored Research (OSR) has created and staffed a team solely dedicated to sponsored research cash management. UNC OSR, via the cash management team, continues to strengthen its cash draw reconciliation processes.

FINDING 4: INAPPROPRIATELY ALLOCATED EXPENSES

4.1 Inappropriately Allocated Materials and Supplies Purchased Near Grant Expiration

UNC accepts the findings identified by the auditors in this subsection, with the exception of findings related to NSF Award Nos. [REDACTED] and [REDACTED], as set forth below.

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4.1.1 November 2017 Kits, NSF Award [REDACTED] (\$6,630)

UNC does not agree with this finding. The diffraction kits were received prior to the end of the award and were used to directly benefit the award, particularly given the unique intent and purpose of the project.

The Final Project Report submitted to NSF states that the goal of this project is to [REDACTED]
[REDACTED]
[REDACTED]

The diffraction kits were used to teach diffraction and interference in the second course of the two-semester sequence developed with support from this award. Materials and supplies to develop the activities for the courses were specifically included in the project budget and approved by NSF.

Purchasing these items near the end of the period of performance of the award is reasonable given that the intent of the award was to develop courses that would continue to be taught after the award ended. Therefore, this expense is allowable.

4.1.2 May 2018 Spin Coater, NSF Award [REDACTED] (\$7,049)

UNC does not agree with this finding. The purchased spin coater directly benefitted the award and made a substantial contribution to the project's success.

As noted in the Draft Audit Report, the item was received a month prior to the end of the project period. This allowed sufficient time for the item to be used in an experimental procedure to test a hypothesis borne out of the analysis of data collected throughout the project. Because the spin coater was necessary to conduct these experiments during the last month of the project period, there is no prohibition on conducting experiments during the last month of a project, and those experiments directly contributed to the project, the cost is allowable.

4.2 Inappropriately Allocated Travel Costs

UNC accepts the findings related to NSF Award Nos. [REDACTED], [REDACTED], [REDACTED], [REDACTED], and [REDACTED]. UNC does not agree with the findings related to NSF Award [REDACTED] as set forth below.

4.2.1 July 2015 Fieldwork, NSF Award [REDACTED] (\$3,879)

UNC does not agree with this finding related to travel costs that were incurred to conduct fieldwork in [REDACTED]. The period of performance for this award was October 1, 2013 through September 30, 2018. As stated in the award budget justification, the project involved the operation of a fieldwork site in [REDACTED]. The questioned expenses involve security costs for the fieldwork site and for van rental for transportation, which are both necessary for fieldwork, and thus directly benefitted the award.

In 2015, on-site fieldwork began prior to the PI's arrival and continued after the PI's departure from the fieldwork site. The Draft Audit Report questions these costs on the basis that the fieldwork period is limited to the period when the PI was physically present at the fieldwork site. That is not the case—fieldwork did continue and was required to continue after the PI departed.

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The expenses were incurred within the period of performance of the award, were necessary for performance of the award, and directly benefited the project. As such, these expenses are allowable.

4.3 Inappropriately Allocated Equipment Costs

With the exception of NSF Award [REDACTED], as set forth below, UNC accepts the Draft Audit Report's findings in this subsection.

4.3.1 January 2018 Chromatography, NSF Award [REDACTED] (\$14,667)

UNC does not agree with this finding questioning costs associated with a chromatography system necessary to replace equipment that had previously been available in the PI's lab. During the course of the audit, the University determined, based on actual usage, that 61% of the costs of the system should be allocated to the NSF award and believes that allocation is reasonable. The Draft Audit Report acknowledges that the equipment was used in furtherance of the NSF award but questions the charge on the basis that the equipment has a useful life of more than one-year and was purchased within the last 9-months of the project's period of performance. The University strongly disagrees that an equipment purchase made that far in advance undermines allowability and believes the expense is reasonable and allowable.

4.4 Inappropriately Allocated Other Direct Costs

UNC accepts these findings.

FINDING 5: UNALLOWABLE EXPENSES

5.1 Unallowable Pre-Award Costs, NSF Award [REDACTED] (\$29,103)

UNC accepts this finding.

5.2 Unallowable Foreign Meal Per Diem

UNC accepts the finding for meal per diem and lodging related to Award [REDACTED]. UNC disagrees with the remainder of the findings in this subsection as set forth below.

5.2.1 Foreign Per Diem and Lodging Various NSF Awards

UNC does not agree with the findings for the September 2014 Meal Per Diem, NSF Award [REDACTED] (\$4,559), December 2016 Meal Per Diem, NSF Award [REDACTED] (\$2,768), July 2016 Lodging, NSF Award [REDACTED] (\$889); January 2017 Lodging, NSF Award [REDACTED] (\$1,330); July 2017 Lodging, NSF Award [REDACTED] (\$1,106); September 2017 Lodging, NSF Award [REDACTED] (\$890). NSF terms and conditions, along with Uniform Guidance, require the non-federal entity to follow its own travel policies. Both the North Carolina Office of State Budget and Management (OSBM) policy and UNC policy allow for the use of foreign per diem rates for travel out of the country, including maximum lodging rates. Specifically, per diem rates promulgated by the U.S. Department of State for international travel can be charged by UNC employees (and all state of North Carolina employees) when using both state and federal funds. Application of foreign per diem rates when using state funds requires department head approval. UNC

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therefore considers the use of the foreign per diem rates for federal funds to be a consistent application of both UNC policy and state of North Carolina policy.

For these specific expenses the rates used to charge the award were consistent with, or less than, the allowable international per diem/lodging rates set forth by the U.S. Department of State for the time period and location. Therefore, they are consistent with UNC and state of North Carolina policy and are allowable.

5.3 Participant Support Costs, NSF Award [REDACTED]

UNC accepts this finding, which was an isolated occurrence in the participant support cost area.

5.4 Unallowable Airfare, Various NSF Awards

UNC accepts these findings. UNC has begun implementation of a new University-wide system to book and reconcile travel expenses, which will greatly enhance our ability to monitor and maintain compliance in this area.

5.5 Unallowable Other Direct Costs, Various NSF Awards

UNC accepts these findings.

FINDING 6: INDIRECT COSTS NOT APPROPRIATELY APPLIED

UNC accepts the findings regarding the application of indirect costs to equipment, capital expenditures, and participant support costs. With respect to equipment charges, the issue was caused by the inadvertent use of an incorrect account code to record the expense.

FINDING 7: GOODS AND SERVICES NOT APPROPRIATELY PROCURED

With the exception of findings related to NSF Award Nos. [REDACTED], [REDACTED], and [REDACTED], as set forth below, UNC accepts the finding identified by the auditors in this subsection.

7.1 Competitive Bidding, NSF Award [REDACTED] (\$12,418); NSF Award [REDACTED] (\$7,957)

UNC acknowledges that there were some deviations from policy related to these expenses. The costs at issue for Award [REDACTED] were incurred to pay a third-party vendor for boats, captains, fuel, accommodations, meals, and SCUBA tanks and refills for the research team to conduct work on the project in a remote area of [REDACTED]. This was the only vendor available in the area from which to procure these services and there is no question that the costs directly benefitted the award. Award [REDACTED] was a Major Research Instrumentation (MRI) grant. The purpose of the MRI Program is to procure or develop research equipment that fosters research training and education. This item, the "master controller" used to manage individual motor controllers in the wavemaker, was necessary for the proper functioning of the instrumentation supported by the award (the wavemaker) and therefore directly benefitted the award, and the selected vendor was the only distributor authorized in the area to sell and support the specific equipment that met the exact needs of this project.

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The University acknowledges the business process issues associated with these costs but submits that those do not trump the allowability of the costs incurred.

7.2 Competitive Bidding, NSF Award [REDACTED] (\$10,060), NSF Award [REDACTED] (\$0)

UNC does not agree with this finding. This transaction utilized a competitively bid contract established by the [REDACTED] to purchase a microscope for grant-related use. [REDACTED] leverages multiple institutions of higher education within [REDACTED] via a competitive procurement process to identify and establish cooperative procurement opportunities resulting in substantial cost savings. [REDACTED] contracts are issued in accordance with the [REDACTED] Procurement Manual for Institutions of Higher Education and their Vendors. The Procurement Manual, like state of North Carolina purchasing regulations, requires competitive procurement processes.

The North Carolina Department of Administration Division of Purchase and Contract released a memo dated September 11, 2012, allowing the use of existing cooperative purchasing groups and referencing State of North Carolina General Statute 143-129(e)(3), which acknowledges competitive bidding group purchasing programs. Use of the [REDACTED] contract is consistent with the North Carolina memo and fulfills North Carolina's competitive bid requirement.

Furthermore, Uniform Guidance, 2 CFR 200.318(e), states: "[t]o foster greater economy and efficiency, and in accordance with efforts to promote cost-effective use of shared services across the Federal Government, the non-Federal entity is encouraged to enter into state and local intergovernmental agreements or inter-entity agreements where appropriate for procurement or use of common or shared goods and services."

This item was purchased via an inter-entity agreement negotiated using competitive procurement activities consistent with those required under state of North Carolina procurement law. Uniform Guidance explicitly allows for use of these agreements to increase efficiency and meet federal purchasing requirements. As such, this item is allowable.

FINDING 8: UNALLOWABLE COSTS CAUSED BY ACCOUNTING ISSUES

UNC accepts the findings associated with NSF Award Nos. [REDACTED], [REDACTED], [REDACTED], [REDACTED], and [REDACTED]. For those costs associated with Award [REDACTED], UNC converted to a comprehensive enterprise financial/accounting system in October 2014. Since that time, UNC has continued to strengthen its controls and processes surrounding cash management. In addition to numerous system and process improvements, UNC OSR has created and staffed a team solely dedicated to sponsored research cash management. UNC OSR, via the cash management team, continues to strengthen its cash draw reconciliation processes.

FINDING 9: NON-COMPLIANCE WITH NSF AWARD SPECIFIC TERMS AND CONDITIONS

UNC accepts the findings related to NSF Award Nos. [REDACTED] and [REDACTED].

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FINDING 10: FY 2015 EFFORT NOT APPROPRIATELY CERTIFIED

UNC accepts that FY2015 effort was not appropriately certified in accordance with its effort reporting policy.

UNC converted to a comprehensive enterprise financial/accounting system in October 2014. This required a transition from the University's prior systems to a new business management platform, including an upgrade to UNC's effort certification system. Conversion issues with the new accounting system delayed its integration into the effort certification system. As a result, FY2015 effort certification was delayed until FY2016. However, by April 29, 2016, effort certification for all of FY2015 was completed, along with effort certification for the first six months of FY2016. This brought UNC current with effort reporting requirements in accordance with University policy. Subsequent to the conversion issues, all effort certifications have been completed timely and in accordance with University policy.

FINDING 11: INCORRECT APPLICATION OF PROPOSED INDIRECT COST RATES

UNC does not agree with this finding. UNC applied the F&A rate that was awarded by NSF per the notice of award. The F&A rate applied to the project was less than the F&A rate in effect at the beginning of the award period of performance.

UNC negotiated and received approval for a new F&A rate agreement effective July 1, 2012, and July 1, 2016. Several NSF awards were proposed and awarded prior to the effective date of the new F&A rate, but the award period of performance began after the effective date of the new F&A rate. In these cases, UNC honored the lower rate included in the original proposal, which was consistent with the F&A rate included in the NSF award. While this differs from the F&A rate in effect at the beginning of the award's period of performance, application of the lower F&A rate is allowable.

Uniform Guidance Frequently Asked Questions, version published July 2017, states that Federal agencies can allow "a non-Federal entity receiving a direct Federal award ... to waive indirect costs or charge less than the full indirect cost rate...." In each case noted in this finding, by applying the F&A rate awarded by NSF, UNC accepted an F&A rate less than the full indirect cost rate in accordance with this guidance. As such, UNC does not agree with this finding.

FINDING 12: NON-COMPLIANCE WITH UNC POLICIES AND PROCEDURES

12.1 UNC Consultant/Independent Contractor Policies, NSF Awards [REDACTED], [REDACTED], [REDACTED]

UNC accepts these findings. Based on the Draft Audit Report's findings UNC reviewed its policy on retaining consultants and determined that sufficient controls exist without requiring the PI to formally approve consultant invoices. Consequently, UNC has removed this requirement from UNC OSR Policy 500.12 – Consultants.

12.2 UNC Cost Transfer Policies, Various NSF Awards

UNC accepts these findings.

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12.3 UNC Subaward Policies, Various NSF Awards

UNC accepts these findings. Since the implementation of Uniform Guidance and the conversion to its new accounting system in 2014, UNC has continued to strengthen its subaward process, including the implementation of a revised subrecipient risk assessment and monitoring process in 2017. UNC OSR also created and staffed a new team solely responsible for outgoing subaward agreements in 2017 to ensure that appropriate resources were allocated to outgoing subawards.

12.4 UNC Travel Policies, Various NSF Awards

UNC accepts these findings. UNC is in the process of implementing a new travel system, powered by Concur, that will provide UNC with a formal process for pre-trip authorization, as well as a method for employees to submit travel reimbursement requests. A pre-trip request will be required in advance of all overnight travel. Both pre-trip requests and reimbursement requests will route through workflow to ensure that appropriate approvals are obtained prior to booking the trip or providing reimbursement. System notifications and reminder emails will be utilized to ensure that expense reports are submitted timely.

The Concur system will also help the traveler identify the correct per diem rate based on dates and location of travel. In addition, the system will require the traveler to (a) submit his/her own request or report for approval, and (b) certify for accuracy and validity. The Concur system is expected to be implemented in FY2021.

12.5 UNC Procurement Policies

UNC accepts these findings, with the following exceptions. For NSF Award [REDACTED], UNC does not agree with this finding. See Response 7.2 above. For NSF Award [REDACTED], UNC acknowledges that there were some deviations from policy in terms of timing related to these expenses but notes that the sole source form was completed in support of a video reflecting project work that was distributed at a prominent research conference.

Regarding the findings related to waiver of competition forms and justification memoranda not being signed by UNC purchasing agents: Since the audit period, UNC has changed its procedure surrounding approval of the Waiver of Competition form. Because the purchasing agent is responsible for creating the purchase order after the applicable purchasing documents are submitted, including the Waiver of Competition form, the purchasing agent signature on the form was determined be extraneous and without added benefit.

12.6 Noncompliance with Other UNC Policies

UNC accepts these findings.

CONCLUSION

As noted at the beginning of this response, the University greatly appreciates the opportunity to work with NSF on this audit. Although the Draft Audit Report contains a number of tentative findings, we do not believe they reflect systemic challenges in the University's award administration systems. That said, the auditors have highlighted some opportunities to enhance our research administration policies,

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procedures, and business processes. To that end, we outline here some of the steps we have taken, or are in the process of taking, to further strengthen our management and administration of NSF awards.

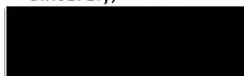
UNC Office of Sponsored Research (OSR), UNC's central contracts and grants office, offers various training opportunities related to research administration. OSR hosts several campus-facing events, including the annual Research Symposium for Research Administrators open to all UNC departments, several OSR Town Halls throughout the year to update campus on new developments in research administration, and the Research Administration Support Group Forum that meets multiple times annually. OSR also conducts Research Administration Forum and Training Sessions to provide in-person training and discussions on relevant topics in research administration.

In addition to these forums, OSR has created the Carolina Research Administration Professional Instructional Development system, a comprehensive training program for research administrators at UNC. This training program provides an online curriculum that covers the entire award life cycle to promote consistency and compliance and it will ultimately become a formal certification program. OSR also provides an online training library and other resources for research administrators.

As mentioned throughout this response, UNC has implemented several policy and system improvements to strengthen its management and administration of NSF awards. These include, but are not limited to, implementation of a new University-wide travel expense system, strengthening of the contracts and grants cash management process, strengthening of outgoing subaward processes, allocation of resources to create and staff several new teams related to crucial aspects of research administration, and clarification and revision of select policies, including requirements for consultant expenses.

UNC is dedicated to compliance and we will continue to pursue opportunities to improve research accounting and administrative practices to foster that commitment.

Sincerely,



David Paul
Assistant Vice Chancellor for Research, Office of Sponsored Research
The University of North Carolina at Chapel Hill

Copy:

Kenneth Lish, National Science Foundation Office of Inspector General
Billy McCain, National Science Foundation Office of Inspector General

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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 UNC 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 UNC 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 UNC and NSF OIG. NSF OIG provided award data that UNC reported through ACM\$ during our audit period. UNC provided detailed transaction-level data to support all costs charged to NSF awards during the period. This data resulted in a total audit universe of \$121,759,036 in costs claimed on 463 NSF awards.

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

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

UNC 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 UNC’s internal controls solely to understand the policies and procedures relevant to the financial reporting and administration of NSF awards to evaluate UNC’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 UNC’s internal controls over award financial reporting and administration. Accordingly, we do not express an opinion on the effectiveness of UNC’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 UNC’s system that warranted focus during our testing.

We began our analytics process by reviewing the transaction-level data that UNC 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 identified 250 transactions for testing and requested that UNC provide documentation to support each transaction. We reviewed this supporting documentation to determine if we had obtained sufficient, appropriate evidence to support the allowability of the selected expenditures. When necessary, we requested and reviewed additional supporting documentation and obtained explanations and justifications from PIs and other knowledgeable UNC 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 UNC 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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