



National Science Foundation • Office of Inspector General
4201 Wilson Boulevard, Suite I-1135, Arlington, Virginia 22230

MEMORANDUM

Date: SEP 29 2016

To: Dale Bell
Director, Division of Institution and Award Support

Jamie French
Acting Director, Division of Grants and Agreements

From: Mark Bell 
Assistant Inspector General, Office of Audits

Subject: Audit Report No. 16-1-023,
University of Michigan

This memo transmits the Cotton & Company LLP (C&C) report for the audit of costs totaling approximately \$258 million charged by the University of Michigan (UM) to its sponsored agreements with the National Science Foundation (NSF) during the period October 1, 2011 through September 30, 2014. The objective of the audit was to determine if costs claimed by UM during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable federal financial assistance requirements.

The auditors found that costs UM charged to its NSF sponsored agreements did not always comply with applicable federal, NSF, and university-specific award requirements. The auditors questioned \$2,710,238 of costs claimed on NSF awards. Specifically, the auditors noted: \$2,242,477 in salary costs that exceeded NSF's allowable limits; \$360,908 in unsupported ACM\$ requests; \$57,355 in equipment purchases that did not benefit NSF awards; \$20,656 in unallowable travel expenses; \$2,635 in unsupported travel expenses; \$8,905 in unallowable upgraded travel and entertainment expenses; \$7,203 of indirect costs improperly claimed on participant support costs; \$6,603 in unallowable additional compensation; and \$3,496 in unallowable visa expenses.

The auditors included nine findings in the report with associated recommendations for NSF to resolve the questioned costs and to ensure UM strengthens administrative and management controls. UM's response, provided on September 9, 2016, is attached in its entirety to the report as Appendix B.

In accordance with Office of Management and Budget Circular A-50, Audit Followup, please provide a written corrective action plan to address the report recommendations. In addressing the report's recommendations, this corrective action plan should detail specific actions and associated milestone dates. Please provide the action plan within 60 calendar days of the date of this report.

OIG Oversight of Audit

To fulfill our responsibilities under generally accepted government auditing standards, the Office of Inspector General:

- 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 and NSF officials, as necessary, to discuss audit progress, findings, and recommendations;
- Reviewed the audit report prepared by C&C to ensure compliance with generally accepted government auditing standards; and
- Coordinated issuance of the audit report.

C&C is responsible for the attached auditor's report on UM and the conclusions expressed in the report. We do not express any opinion on the conclusions presented in C&C's 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 Ken Lish at 303-844-4738.

Attachment

cc: Alex Wynnyk, Branch Chief, CAAR
Rochelle Ray, Team Leader, CAAR
John Anderson, Audit & Oversight Committee Chairperson, NSB
Michael Van Woert, Executive Officer, NSB
Ann Bushmiller, Senior Counsel, NSB
Christina Sarris, Assistant General Counsel, OD
Kaitlin McDonald, Program Analyst, OD
Ken Chason, Counsel to the Inspector General, OIG
Elizabeth Sweetland, Attorney, OIG

UNIVERSITY OF MICHIGAN

**PERFORMANCE AUDIT OF INCURRED COSTS FOR
NATIONAL SCIENCE FOUNDATION AWARDS
FOR THE PERIOD OCTOBER 1, 2011, TO SEPTEMBER 30, 2014**

**NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL**

TABLE OF CONTENTS

I. BACKGROUND	1
II. AUDIT RESULTS	1
FINDING 1: SALARY COSTS EXCEEDING NSF'S ALLOWABLE LIMITS.....	2
FINDING 2: UNSUPPORTED ACM\$ REQUESTS	4
FINDING 3: UNALLOWABLE EQUIPMENT PURCHASES.....	6
FINDING 4: UNALLOWABLE TRAVEL EXPENSES	8
FINDING 5: UNSUPPORTED TRAVEL EXPENSES.....	10
FINDING 6: UNALLOWABLE AIRFARE AND ENTERTAINMENT EXPENSES	11
FINDING 7: INDIRECT COSTS IMPROPERLY CLAIMED ON PARTICIPANT SUPPORT COSTS	13
FINDING 8: UNALLOWABLE ADDITIONAL COMPENSATION.....	14
FINDING 9: UNALLOWABLE VISA EXPENSES	15
APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING.....	18
APPENDIX B: UNIVERSITY OF MICHIGAN RESPONSE.....	20
APPENDIX C: OBJECTIVES, SCOPE, AND METHODOLOGY.....	27
APPENDIX D: DETAILED UNALLOWABLE SALARY CALCULATION AND QUESTIONED COSTS FOR FINDING 1	30



Cotton & Company LLP
635 Slaters Lane
4th Floor
Alexandria, VA 22314

P: 703.836.6701
F: 703.836.0941
www.cottoncpa.com

**NATIONAL SCIENCE FOUNDATION
PERFORMANCE AUDIT OF INCURRED COSTS
UNIVERSITY OF MICHIGAN**

I. BACKGROUND

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

Most federal agencies have an Office of Inspector General (OIG) that provides independent oversight of the agency's programs and operations. Part of the NSF OIG's mission is to conduct audits and investigations to prevent and detect fraud, waste, and abuse. In support of this mission, the 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. The NSF OIG may also hire a contractor to provide these audit services.

The NSF OIG engaged Cotton & Company LLP (referred to as "we") to conduct a performance audit of incurred costs for the University of Michigan (UM). This performance audit included obtaining transaction-level data for all costs that UM charged to NSF during the audit period and selecting a sample of transactions for testing. Our audit of UM, which covered the period from October 1, 2011, to September 30, 2014, encompassed more than \$258 million in expenditures that UM claimed on Federal Financial Reports (FFRs) and through the Award Cash Management Service (ACM\$) during our audit period.

This performance audit, conducted under Contract No. D14PA00035, was designed to meet the objectives identified in the Objectives, Scope, and Methodology (OSM) section of this report and was conducted in accordance with Generally Accepted Government Auditing Standards, issued by the Government Accountability Office. We will communicate the results of our audit and the related findings and recommendations to UM and the NSF OIG.

II. AUDIT RESULTS

As described in the OSM section of this report, we performed data analytics on the entire universe of expenditures that UM claimed during the audit period, which included \$258,020,648 in costs claimed on 1,370 NSF awards. Based on the results of our testing, we found that UM did not always comply with all federal, NSF, and university-specific award requirements. As a

result, we questioned \$2,710,238 of costs claimed by UM during the audit period. Specifically, we found:

- \$2,242,477 in salary costs that exceeded NSF's allowable limits.
- \$360,908 in unsupported ACM\$ requests.
- \$57,355 in equipment purchases that did not benefit NSF awards.
- \$20,656 in unallowable travel expenses.
- \$2,635 in unsupported travel expenses.
- \$8,905 in unallowable upgraded travel and entertainment expenses.
- \$7,203 of indirect costs improperly claimed on participant support costs.
- \$6,603 in unallowable additional compensation.
- \$3,496 in unallowable visa expenses.

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

Finding 1: Salary Costs Exceeding NSF's Allowable Limits

UM employees identified as senior personnel inappropriately allocated more than two months (or the maximum number of approved months) of their salaries to NSF within a single year. NSF policies require that awardees obtain specific approval to charge more than two months of a senior personnel member's salary to NSF during a single year; for the employees identified, UM either did not receive express permission to do so or allocated salaries to NSF awards in excess of the number of months expressly approved by NSF. UM therefore should not have charged NSF any salary expenses in excess of this limit.

NSF's *Award and Administration Guide* (AAG), Chapter V, Section B.1.a.(ii)(a) states that NSF normally limits the amount of salary that senior project personnel may allocate to NSF awards to no more than two months of their regular salary in any one year. The guidelines specifically assert that if the grantee anticipates the need to allocate senior personnel salary in excess of two months, the excess compensation must be requested in the proposal budget, justified in the budget support documentation, and specifically approved by NSF in the award notice. In instances in which the grantee specifically requests to allocate more than two months of a senior personnel member's salary to NSF, the total amount of salary allocable is limited to the maximum number of months that NSF specifically approves within the NSF award notice.

While UM's Office of Research and Sponsored Projects (ORSP) sends each department a memo informing them of their responsibility for monitoring salary spending, ORSP does not specifically review grant expenditures to evaluate the total amount of senior personnel salary charged to each year of an award during grant closeout. As a result, senior personnel are able to, and do, allocate more than the maximum number of approved months of salary to NSF during the year. Specifically, we found 92 instances in which an employee identified as senior personnel inappropriately charged NSF awards more than the allowable maximum amount of their salary. (See Appendix D for the detailed unallowable salary calculation and schedule of questioned costs.)

UM was unable to provide any documentation to verify that NSF had given express permission, either through the award notice or through subsequent approvals, for the identified employees to

allocate more than two months (or the maximum number of months identified) of their salary to NSF. We are therefore questioning \$2,242,477 of salary, fringe benefits, and indirect expenses charged to NSF that exceeded the allocation limits.

FY	Questioned Costs			Total
	Direct	Fringe	Indirect	
2012	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$509,949
2013	[REDACTED]	[REDACTED]	[REDACTED]	862,676
2014	[REDACTED]	[REDACTED]	[REDACTED]	<u>869,852</u>
Total Questioned Costs	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	<u>\$2,242,477</u>

Recommendations

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

1. Repay NSF the \$2,242,477 of questioned costs.
2. Update UM’s policies and procedures to require senior personnel to receive express permission to allocate more than two months of their salary to NSF during a one-year period.
3. Strengthen the administrative and management controls and processes over the allocation of senior personnel salary to ensure compliance with NSF policies.
4. Implement university-wide procedures to ensure that all departments appropriately monitor the allocation of senior personnel salaries.

University of Michigan Response: UM disagrees with this finding, as it believes that it has complied with NSF policies and guidance with respect to senior personnel salaries. Specifically, UM cited the NSF AAG in effect during the audit period, which included instructions for budget change(s) but did not specify that NSF approval was required for senior project personnel salary increases. Furthermore, UM referenced a 2010 Frequently Asked Questions (FAQ) document published by NSF’s policy office that stated that awardees have authority to re-budget senior personnel salary changes without NSF approval.

UM also cited the NSF *Proposal and Award Policies and Procedures Guide* 15-1, which became effective after the audit period. This document expressly states that “Under normal rebudgeting authority, as described in AAG Chapters II and V, an awardee can internally approve an increase or decrease in person months devoted to the project after an award is made, even if doing so results in salary support for senior personnel exceeding the two month salary policy.”

Auditors’ Additional Comments: Our position regarding the finding does not change. While Exhibit II-1 of NSF’s AAG does not specifically require the awardee to obtain NSF approval before re-budgeting senior personnel salary when the re-budgeting will cause the awardee to exceed the two-month salary limitation, it does require NSF approval for a change in the number

of person-months devoted to the project. In addition, Exhibit II-1 specifically states, “[T]his listing of Notifications and Requests for approval is not intended to be all-inclusive”; that the list does not include the re-budgeting of senior personnel salaries therefore does not signify that NSF does not require the awardee to obtain approval for such a change, as stated within AAG Chapter V, Section B.1.a.(ii)(a).

In addition, we noted that UM’s reference to the language included in the 2010 FAQ document was actually from an FAQ document issued in 2013. The 2010 FAQ response provided on NSF’s website indicates that an awardee may internally approve an increase of senior personnel salary after an award is made without NSF approval, however, it does not provide guidance that the two-month limit may be exceeded. Furthermore, the FAQs posted on the NSF website do not represent authoritative guidance and therefore do not overrule the AAG, which requires specific approval to allocate more than two months of a senior individual’s salary to NSF during a one-year period. UM also cited NSF’s December 2014 *Proposal and Award Policies and Procedures Guide*, which confirms the guidance provided by the FAQ; however, this Guide did not become effective until December 26, 2014, and therefore does not apply to the periods associated with the questioned costs.

Finding 2: Unsupported ACM\$ Requests

UM inappropriately requested \$360,908 from NSF’s Award Cash Management System (ACM\$) to reimburse expenses that had not yet been incurred. Specifically, UM’s final funding requests for six NSF awards were based on the amount of funding remaining on the grant awards, rather than on the amount of actual disbursements that had been, or would be, made within three days, as required by NSF policy. UM’s accounting records did not support the amounts of these ACM\$ requests, and UM should not have claimed or received reimbursement for any funds requested in excess of actual disbursements that had been, or would be, made within three days.

Each year, NSF’s Division of Financial Management sends awardees, including UM, an e-mail identifying all NSF awards with unliquidated balances that are funded by NSF appropriations that will be cancelled at the end of the fiscal year. Specifically, these e-mails state that NSF will financially close and de-obligate unliquidated balances for the identified awards, and that no future adjustments will be accepted against the appropriations once they have been cancelled. If UM believed that it would incur additional grant-related expenses on any of the awards identified in this e-mail, it would estimate the total funding necessary for all remaining grant expenditures and draw down that amount before the fiscal year expired, regardless of actual disbursements on the ACM\$ request date. This methodology enabled UM to access funding to pay for additional grant expenses after NSF cancelled the award’s appropriations.

NSF’s AAG, Chapter III: *Financial Requirements and Payments*, Section C.2.a., *Payment Policies*, states that when completing a payment request, awardees must certify that all disbursements have been made or will be made within three days of the receipt of the payment for the purposes and conditions of the awards. Furthermore, to ensure compliance with this policy, NSF’s ACM\$ system requires the awardee to certify “that to the best of my knowledge and belief, this request is true in all respects and that all disbursements have been or will be made

within 3 days of this request for the purposes and conditions... of the awards” before submitting requests for reimbursement through ACM\$.

As NSF policies require that awardees only claim reimbursement for expenditures that have been or will be made within three days of the ACM\$ request date, UM should not have drawn down any funding that was not supported by its accounting records. We are therefore questioning \$360,908 in costs that UM drew down from ACM\$ without supporting disbursements.

NSF Award No.	Fiscal Year	Unobligated Balance as of the Previous FFR	Final FFR Claimed Amount	Final FFR Amount Supported by GL Detail ¹	Questioned Cost ²
	2013	\$231,635	\$231,635	\$12,660	\$218,975
	2013	103,037	103,037	32,347	70,690
	2013	15,307	15,307	12,069	3,238
	2014	60,490	60,490	41,560	18,930
	2014	64,712	64,712	27,178	37,534
	2014	56,358	56,358	44,817	11,541
Total Questioned Costs					<u>\$360,908</u>

Recommendations

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

1. Repay NSF the \$360,908 of questioned costs.
2. Update its policies and procedures to include specific guidance regarding expiring appropriations. Guidance could include:
 - a. A description of cancelling appropriations, including the laws governing the appropriations and how they affect funding available for award research.
 - b. How personnel in charge of award spending can ensure that UM appropriately spends grant funds before NSF cancels appropriation funding.
3. Strengthen the administrative and management controls and processes over ACM\$ drawdowns on sponsored awards, particularly ones with expiring appropriations, to ensure that all funds requested are supported by actual award disbursements.

¹ This column includes general ledger (GL) detail available for the three days after the ACM\$ request date.

² We are questioning these costs solely because the amounts drawn down in ACM\$ for these awards were not supported at the time of the actual disbursements; we did not identify the costs as not allocable, allowable, or reasonable to NSF awards.

University of Michigan Response: UM does not agree with this finding, as it believes that it incurred all relevant expenses within the approved period of performance (POP) of each award. Specifically, UM notes that, because NSF often authorizes multiple no-cost time extensions on its awards, an award's POP is often extended past the related appropriation's fixed expiration date. In these cases, NSF notifies UM of the date on which the cash management system will shut down (generally one or two weeks prior to the appropriation end date) and states that the shutdown date will be UM's last opportunity to draw funds on the award, even if the POP for that award extends beyond the shutdown date. As a result, UM must calculate the projected remaining expenses that it will incur during the award's POP and then request the final payment prior to the shutdown date.

Auditors' Additional Comments: Our position regarding the finding does not change. While we understand that UM would have been unable to draw down funding for award-related costs if the funds were not disbursed prior to the appropriation expiration date, NSF's AAG requires that awardees disburse all withdrawn funding within three days of the receipt of the ACM\$ payments.

Finding 3: Unallowable Equipment Purchases

UM personnel charged \$57,355 to NSF awards for equipment expenses that did not appear to be reasonable, allowable, or necessary for accomplishing award objectives and that therefore should not have been charged to NSF. Specifically:

- On August 26, 2011, two months before NSF Award No. [REDACTED] expired, the Principal Investigator (PI) of the award ordered equipment totaling \$ [REDACTED], which UM invoiced and charged to the award after its POP had expired. While UM provided a purchase order verifying that it had ordered the equipment during the award's POP, the invoice that UM provided indicates that the equipment was not shipped to UM until November 1, 2011, after the award's POP expired.

The PI of this award transferred to UM and, upon realizing that UM did not have the appropriate equipment to conduct the proposed research, requested permission to purchase the equipment with the available grant funding. While the PI's request was approved, UM did not receive the equipment until after the award's POP had expired, and the equipment therefore did not benefit research performed under this award.

- UM's grant proposal for NSF Award No. [REDACTED] stated that the researchers would require access to a boat to perform the research; however, UM did not request funding to purchase a boat, as the PI stated that he had access to one. Approximately three years into the award's POP, the PI charged \$ [REDACTED] to the award to purchase the boat he had been using from UM's College of [REDACTED]. As UM already owned the boat and the grant proposal had identified this boat as available to the PI, using NSF funds to purchase the boat does not appear to have been necessary to achieve the award objectives.

The PI stated that he lost operational control of the boat after the retirement of the co-PI, who was an [REDACTED] professor; however, as the PI was identified as the original purchaser of the boat, it was unclear why the co-PI's retirement would have required the PI to purchase a boat to which he previously had access.

According to 2 Code of Federal Regulations (CFR) 220, Appendix A, Section C.4, *Allocable Costs*, a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to such cost objective in accordance with relative benefits received or other equitable relationship. In addition, NSF’s AAG, Chapter V: *Allowability of Costs*, Section A. *Basic Considerations* states that grantees should ensure that costs claimed under NSF grants are necessary, reasonable, allocable, and allowable under the applicable cost principles, NSF policy, and/or the program solicitation.

As the equipment purchases do not appear to have been necessary to fulfill the objectives of the identified NSF awards, we are questioning \$57,355 of equipment expenses, as follows:

NSF Award No.	Fiscal Year	Questioned Costs		
		Direct	Indirect	Total
██████████	2012	\$██████████	██████████	\$33,355
	2013		██████████	24,000
Total Questioned Costs		\$██████████	██████████	<u>\$57,355</u>

Recommendations

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

1. Repay NSF the \$57,355 of questioned costs.
2. Strengthen the administrative and management controls and processes over allocating equipment expenses to sponsored projects. Processes could include strengthening internal procedures and performing periodic reviews of individual departments for compliance with and proper implementation of UM’s Procurement Policy and 2 CFR 220 regulations.
3. Strengthen the administrative and management controls and procedures over the processing of expenses at the end of an award’s POP.

University of Michigan Response: UM disagrees with this finding, as it believes that each of the equipment purchases was essential to accomplishing the objective of the related NSF award and was therefore an allowable expense.

With regard to NSF Award No. ██████████, UM stated that awardees are allowed to approve equipment purchases within the last 90 days of the award POP, and that the PI obtained approval before initiating the purchase of the equipment; UM therefore believes that the expense should be allowable. Furthermore, UM emphasized that the PI requested and received the NSF Program Director’s approval to redirect funding to purchase the equipment in question.

With regard to NSF Award No. ██████████, UM stated that the approved budget included funding for the use of a survey vessel; UM believes that the expense should be allowable because the vessel was essential to accomplish the objectives of the award. UM stated that the boat that the

PIs had previously used as the survey vessel on this award belonged to the [REDACTED] Department, where one of the PIs worked; when this individual retired, the [REDACTED] Department identified the boat as surplus and therefore scheduled it to be disposed of per UM guidelines. The other PI, who worked in the UM [REDACTED] Department, obtained internal approval to re-budget the funds and arranged for the asset to be transferred to this NSF award rather than sold to an external party, to ensure that the boat was still available to perform research on this award.

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

With regard to NSF Award No. [REDACTED], while UM may have obtained appropriate approval to purchase the equipment, it did not receive the equipment until after the award's POP ended. Because the equipment was not available during the award's POP, UM did not charge this expense to the award in accordance with the relevant benefits received, as required by 2 CFR 220.

With regard to NSF Award No. [REDACTED], while access to the boat was necessary to achieve the objectives of the award, the use of NSF funding to purchase the boat from another department at UM does not appear to have been necessary or reasonable. Specifically, it does not appear reasonable that UM was to charge NSF \$ [REDACTED], a cost that was only supported by internal UM valuation documents, for moving assets internally between departments.

Finding 4: Unallowable Travel Expenses

UM inappropriately charged three NSF awards a total of \$20,656 in travel expenses that either did not benefit the awards charged or were for travel that took place after the award's POP had expired. These travel expenses were unallowable and therefore should not have been allocated to NSF. Specifically:

- On August 28, 2013, three days before NSF Award No. [REDACTED] expired, the PI purchased a \$ [REDACTED] airplane ticket to Japan to attend a conference in [REDACTED] Japan from July 13 through 19, 2014, approximately one year after the end of the award's POP.
- The PI for NSF Award No. [REDACTED] spent the 2012-2013 academic year (AY) in Paris, France teaching classes at [REDACTED] and purportedly performing research on this award. At the close of the AY, the PI purchased a \$ [REDACTED] airplane ticket from France to Michigan to return to work at UM and allocated the full ticket price to the NSF award. The PI stated that [REDACTED] had paid part of his salary during the year but did not pay for his travel expenses, and as he had spent time in Paris working on NSF Award No. [REDACTED], it was appropriate to allocate the travel expenses to this award. However, the purpose of the trip was to assume a temporary teaching position in Paris and was not related to research on this NSF award, and the PI therefore should not have charged the airfare cost to the award. Furthermore, the annual report submitted for NSF Award No. [REDACTED] for the year ended September 30, 2013, stated, "[T]he work went slowly because the PI ... was on leave in Paris, France, teaching at [REDACTED] (i.e. it was not a research leave)."

- On September 29, 2013, one day before NSF Award No. [REDACTED] expired, the PI purchased a \$ [REDACTED] airplane ticket to [REDACTED] to attend a conference in August 2014, approximately one year after the end of the award's POP. Furthermore, the PI was unable to attend the conference, and he therefore agreed that he should not have allocated the expense to NSF.
- On March 21, 2014, 10 days before NSF Award No. [REDACTED] expired, the PI provided a pre-paid room deposit of \$ [REDACTED] to a hotel in [REDACTED] Argentina for lodgings for a conference that he intended to attend in August 2014, several months after the end of the award's POP. Furthermore, the PI was unable to attend the conference, and he therefore agreed that he should not have allocated the expense to NSF.

According to 2 CFR 200, Appendix A, Section C.4, *Allocable Costs*, a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to such cost objective in accordance with relative benefits received or other equitable relationship. Subject to the foregoing, a cost is allocable to a sponsored agreement if it is incurred solely to advance the work under the sponsored agreement. In addition, NSF's AAG, Chapter V, Section A.1.2.c., *Post-Expiration Costs*, states that grantees should not make purchases in anticipation of grant expiration where there is little or no time left to use the purchased items in the actual conduct of the research.

As the travel expenses did not benefit the NSF awards charged, we are questioning \$20,656 of travel expenses allocated to NSF, as follows:

NSF Award No.	Fiscal Year	Questioned Costs		
		Direct	Indirect	Total
[REDACTED]	2014	\$ [REDACTED]	\$ [REDACTED]	\$6,881
[REDACTED]	2013	[REDACTED]	[REDACTED]	5,983
[REDACTED]	2014	[REDACTED]	[REDACTED]	5,207
[REDACTED]	2014	[REDACTED]	[REDACTED]	<u>2,585</u>
Total Questioned Costs		\$ [REDACTED]	\$ [REDACTED]	<u>\$20,656</u>

Recommendations

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

1. Repay NSF the \$20,656 of questioned costs.
2. Strengthen the administrative and management controls and processes over allocating travel expenses to sponsored projects. Processes could include strengthening internal procedures and performing periodic reviews of individual departments for compliance with and proper implementation of UM's Travel and Business Hosting Expense Policy and 2 CFR 220 regulations.

- Strengthen the administrative and management controls and procedures over the processing of expenses at the end of an award's POP.

University of Michigan Response: UM agrees that the travel expenses identified above were inappropriately charged to NSF and will take the appropriate steps to remove the costs from the respective awards.

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

Finding 5: Unsupported Travel Expenses

UM was unable to support \$2,635 of travel expenses charged to an NSF award. Without documentation to support the purpose and the amount of the expense claimed, we were unable to verify that the expense was allocable, allowable, reasonable, and in conformity with NSF award terms and conditions or applicable federal financial assistance requirements.

Specifically, in November 2011, UM charged \$ [REDACTED] in airfare expenses to NSF Award No. [REDACTED], purportedly for the PI to travel to [REDACTED] University to perform collaborative research on the award; however, the supporting documentation was not legible, and UM was unable to identify the traveler's name, the location of the travel, or the dates of the travel to verify that the expense related to the scope of this award.

According to 2 CFR 220, Appendix A, Section C.4, *Allocable Costs*, a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to such cost objective in accordance with relative benefits received or other equitable relationship. Subject to the foregoing, a cost is allocable to a sponsored agreement if it is incurred solely to advance the work under the sponsored agreement. In addition, UM's Travel and Business Hosting Expense Policy requires travelers to attach appropriately detailed receipts to their expense reports, including destinations, hotel and airfare charges, detailed item charges, the specific business purpose, and readable images.

As UM was unable to adequately support the amounts and purpose of the travel expenses, we are questioning \$2,635, as follows:

NSF Award No.	FY	Questioned Costs		
		Direct	Indirect	Total
[REDACTED]	2012	\$ [REDACTED]	\$ [REDACTED]	\$2,635

Recommendations

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

- Repay NSF the \$2,635 of questioned costs.

2. Strengthen the administrative and management controls and processes over processing expense reports charged to federal awards. Processes could include performing periodic reviews of individual departments and divisions for compliance with and proper implementation of UM's Business and Travel Expense Policy.
3. Strengthen the administrative and management controls and processes over the processing of travel credit reimbursements.

University of Michigan Response: UM disagrees with this finding, as it believes that the questioned costs benefited the awards charged.

With regard to the costs that we originally questioned on NSF Award No. [REDACTED],³ UM stated that the visiting professor incurred more than \$ [REDACTED] for travel expenses and work performed on the project, but only received \$ [REDACTED] in compensation, as proposed in the original award budget. UM stated that the payment was one of five travel reimbursements paid to the collaborator in accordance with the budget, and that each expense was allocable to the NSF award.

With regard to NSF Award No. [REDACTED], UM stated that the airfare expense was supported by a credit card statement and by the PI's explanation for the charges. UM reiterated that this expense was incurred for the PI to travel to [REDACTED] University to give a lecture about research on this grant and that the expense therefore benefitted the award to which it was charged.

Auditors' Additional Comments: Our original draft report included questioned costs identified for NSF Award No. [REDACTED]. Based on UM's formal response to our draft report, we were able to verify that the costs payable to the visiting professor exceeded the \$ [REDACTED] budgeted and to identify how UM had calculated the \$5,124 travel expense charged to the award. Based on this information, we verified that the amount of the expense was appropriate to allocate to this award. We are therefore no longer questioning these costs.

Our position regarding the questioned costs identified for NSF Award No. [REDACTED] did not change, however, as the documentation that UM provided to support the airfare expense did not support when or where the travel occurred or identify the traveler.

Finding 6: Unallowable Airfare and Entertainment Expenses

UM inappropriately charged five NSF awards a total of \$8,905 in business-class airfare and entertainment expenses. Upgraded airfare expenses and entertainment expenses are expressly unallowable under 2 CFR 220, and UM therefore should not have allocated these amounts to NSF. Specifically:

- In January 2014, an individual identified as senior personnel on NSF Award No. [REDACTED] charged the award \$6,214 for business-class airfare for a round trip from Michigan to [REDACTED], Germany to attend a grant-related conference. An equivalent economy-class ticket would have been \$2,561, or approximately \$3,653 less than the upgraded fare.

³ Our original draft report included \$7,968 in questioned costs claimed on NSF Award No. [REDACTED].

- In January 2012, UM charged \$1,000 to NSF Award No. [REDACTED] to enable 20 eighth-grade students to attend a horseback-riding clinic. These students were participating in Future Undergraduates in Energy Laboratories (FUEL) workshops, which were sponsored by this award.
- In June 2014, the PI of NSF Award No. [REDACTED] charged the award \$3,873 for business-class airfare for a round trip from Michigan to [REDACTED] Switzerland to attend a grant-related conference. An equivalent economy-class ticket would have been \$3,267, or approximately \$606 less than the upgraded fare.
- In June 2012, UM charged \$851 to NSF Award No. [REDACTED] to purchase 21 tickets to [REDACTED] Amusement Park for the students participating in the Research Experiences for Undergraduates (REU) summer program. The REU program was sponsored by this award.
- In July 2014, UM charged \$432 to NSF Award No. [REDACTED] for 108 students participating in the Michigan-Louis Stokes Alliance for Minority Participation (MI-LSAMP) to participate in a tour of the UM football stadium. MI-LSAMP is a summer program sponsored by this award.

According to 2 CFR 220, Appendix A, Section J.53.c., *Commercial Air Travel*, airfare costs in excess of the customary standard commercial airfare (coach or equivalent), federal government contract airfare (where authorized and available), or the lowest commercial discount airfare are unallowable except when such accommodations would: (a) require circuitous routing, (b) require travel during unreasonable hours, (c) excessively prolong travel, (d) result in additional costs that would offset the transportation savings, or (e) offer accommodations not reasonably adequate for the traveler’s medical needs. In addition, UM’s Travel and Business Hosting Expense Policy states that first class/business class is only allowable when the UM traveler is accompanying a major donor or dignitary flying first/business class, and documentation must state the business reason for any altered flights.

According to 2 CFR 220, Appendix A, Section J.17, *Entertainment Costs*, the costs of entertainment, including amusement, diversion, and social activities, and any costs directly associated with such costs (such as tickets to shows or sports events, meals, lodging, rentals, transportation, and gratuities) are unallowable.

The sampled entertainment expenses are unallowable under 2 CFR 220, as are the upgraded airfare expenses, as the upgrades were not incurred as a result of any of the acceptable accommodation upgrade situations identified by 2 CFR 220. As a result, these expenses should not have been charged to NSF awards. We are therefore questioning \$8,905 of unallowable airfare and entertainment expenses, as follows:

NSF Award No.	FY	Questioned Costs		
		Direct	Indirect	Total
[REDACTED]	2014	\$ [REDACTED]	\$ [REDACTED]	\$5,680
[REDACTED]	2012	[REDACTED]	[REDACTED]	1,000
[REDACTED]	2014	[REDACTED]	[REDACTED]	942
[REDACTED]	2012	[REDACTED]	[REDACTED]	851

NSF Award No.	FY	Questioned Costs		
		Direct	Indirect	Total
██████████	2015	██████████	██████████	432
Total Questioned Costs		\$██████████	\$██████████	<u>\$8,905</u>

Recommendations

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

1. Repay NSF the \$8,905 of questioned costs.
2. Strengthen the administrative and management controls and processes over the processing of expenses allocable to expense categories that accumulate costs that may be expressly unallowable under 2 CFR 220, including upgraded airfare and entertainment expenses.

University of Michigan Response: UM agrees with the questioned costs identified for NSF Award No. ██████████, ██████████, and ██████████ and has updated its Travel and Business Hosting Expense Policy to clarify the rules regarding the use of federal funds for the purchase of airfare.

UM disagrees with the costs questioned on NSF Award No. ██████████ and ██████████, as the entertainment activities were included in the award proposals and provided opportunities for award participants to engage in social interaction.

Auditors’ Additional Comments: Our position regarding this finding does not change. While the award proposals did include references to social interaction activities, 2 CFR 220, Appendix A, Section J.17 specifically identifies entertainment expenses as unallowable under federal awards.

Finding 7: Indirect Costs Improperly Claimed on Participant Support Costs

UM inappropriately claimed \$7,203 in indirect costs related to participant support costs (PSCs) incurred on one NSF award. NSF’s *Proposal and Award Policies and Procedures Guide*, Chapter V, Section B.8.a.(iii) states that NSF generally does not allow awardees to apply indirect costs to expenses paid to or on behalf of participants; however, UM allocated PSCs to accounts that applied UM’s indirect cost rate. Specifically, in April 2013, UM charged \$██████████ to NSF Award No. ██████████ for foreign travel expenses incurred by students participating in a summer research program sponsored by the award. UM did not identify the travel expenses as PSC and, as a result, inappropriately charged \$7,203 in indirect costs to NSF.

UM’s policies and procedures require it to establish a separate account to track and manage participant support activities; this account should not be coded to incur indirect costs. UM failed to appropriately segregate PSCs for this award, however, and as a result, it inappropriately applied indirect costs to PSCs. We are therefore questioning \$7,203 in indirect costs charged to NSF, as follows:

NSF Award No.	Fiscal Year	Questioned Costs		
		Direct	Indirect	Total
██████████	2013	██████████	██████████	\$7,203

Recommendations

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

1. Repay NSF the \$7,203 of questioned costs.
2. Strengthen the administrative and management controls and processes over PSCs. Processes could include:
 - a. Developing new policies and procedures that require UM to annually review all project-grant accounts set up for those NSF awards that include PSCs in their budget. This review should be designed to ensure that UM created a sub-account for each award to track and manage PSC activity, and that the sub-account is appropriately accounting for all PSCs.
 - b. Updating UM’s policies and procedures to require a more stringent review of all conference expense costs that are allocated to federal awards and are not accumulated in a PSC account.

University of Michigan Response: UM agrees that it improperly claimed indirect costs on PSCs and has agreed to take the appropriate steps to remove the costs from the award.

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

Finding 8: Unallowable Additional Compensation

UM charged \$5,521 to NSF Award No. ██████████ for a retroactive salary adjustment processed after an employee left UM. The retroactive salary adjustment does not appear to have been reasonable, and UM therefore should not have allocated the additional costs associated with the adjustment to NSF.

In February 2014, UM charged NSF Award No. ██████████ for a retroactive adjustment in salary earned by a post-doctoral fellow from ██████████ through ██████████ 2013. The fellow left UM in January 2014; however, on February 6, 2014, the Human Resources Department (HR) received a letter requesting a retroactive increase to the fellow’s annual salary earned during his previous employment at UM, effective July 1, 2013. HR calculated the amount that should have been paid to the fellow based on the newly requested salary of \$██████████ (i.e., \$██████████), then subtracted the amount that he had received based on his assigned salary of \$██████████ at the time of payment (i.e., \$██████████) and determined that UM should have charged an additional \$5,521 to the NSF award for work that the fellow performed from ██████████ to ██████████ 2013.

According to 2 CFR 220, Appendix A, Section J.10.d, charges for work that faculty members performed on sponsored agreements should be determined for each faculty member at a rate not in excess of the base salary divided by the period to which the base salary relates. Furthermore, it states that in no event will charges to sponsored agreements, irrespective of the basis of computation, exceed the proportionate share of the base salary for that period.

The retroactive salary adjustment represented a 50 percent increase in the fellow’s annual salary and provided the fellow with an additional \$5,521, equivalent to more than [REDACTED] of his previous salary, for no additional tasks performed. The fellow was a full-time salaried employee, and compensation in excess of his base salary divided by the period to which it relates is not permitted on federally sponsored projects. We are therefore questioning the amount of additional salary this employee received, as well as all associated fringe benefits and indirect expenses, as follows:

NSF Award No.	FY	Questioned Costs			
		Direct	Fringe	Indirect	Total
[REDACTED]	2014	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$6,603

Recommendations

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

1. Repay NSF the \$6,603 of questioned costs.
2. Strengthen the administrative and management controls and processes over charging sponsored awards for salary expenses in excess of an employee’s salary agreement.

University of Michigan Response: UM disagrees with this finding, as it believes that the large volume and high quality of work performed by the fellow while he was serving as the [REDACTED] ([REDACTED]) of the project justified the substantial pay increase.

Auditors’ Additional Comments: Our position regarding the finding does not change. While UM stated that the salary increase was justifiable, providing a 50 percent retroactive salary increase effective for the fellow’s entire assignment after the fellow had already left the university does not appear reasonable.

Finding 9: Unallowable Visa Expenses

UM did not allocate expenses incurred for an H-1B visa extension to NSF Award No. [REDACTED] based on the relative benefits received. In July 2012, UM allocated to the award 100 percent of the \$2,300 in expenses for an H-1B visa extension incurred to support an employee that had overseen the development of software used for this NSF project. The employee did not allocate any of his effort to this NSF award during July 2012, when the expense was incurred, and only allocated a total of [REDACTED] percent of his effort to this award during calendar year 2012.

According to 2 CFR 220, Section C.4., *Allocable Costs*, a cost is allocable to a particular cost objective if the goods or services involved are assignable to such cost objective in accordance with relative benefits received or other equitable relationship. Additionally, UM’s Allowability of Visa Expenses on Sponsored Projects Policy states that if a visa expense benefits multiple UM sources, the charge assigned to a sponsored project should be prorated accordingly. UM did not appropriately prorate or allocate the visa expense based on the relative benefit received, however, as it allocated 100 percent of the expense to this NSF award despite the employee allocating less than 100 percent of his effort to this award. As a result, UM does not appear to have allocated the appropriate proportion of the expense to NSF. As we are unable to determine the appropriate amount allocable to this NSF award, we are questioning the full amount of the visa expense and all associated indirect expenses, as follows:

NSF Award No.	Fiscal Year	Questioned Costs		
		Direct	Indirect	Total
██████████	2013	\$ ██████████	\$ ██████████	\$3,496

Recommendations

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

1. Repay NSF the \$3,496 of questioned costs.
2. Implement new policies and procedures that require all visa expenses allocated to sponsored projects be reviewed to ensure the amount allocated to federal awards is supported by an employee’s effort report to ensure the amount allocated to the award was in accordance with the proportional benefit received.

University of Michigan Response: UM disagrees with this finding, as it believes that the visa extension costs were allowable and allocable under this award. Specifically, UM stated that, while it had allocated the sampled employee’s salary costs to several funding sources that supported the ██████████ (██████),⁴ costs associated with this employee were allowable and allocable to all of the funding sources.

Auditors’ Additional Comments: Our position regarding the finding does not change. As this employee’s role at UM benefitted multiple funding sources, the visa extension that permitted the employee to remain at UM should have been allocated to each of the funding sources that benefitted from the expense.

⁴ Per UM’s response, the ████████ receives funding from NSF, various agencies within the U.S. Department of Health and Human Services, the U.S. Department of Agriculture, and the Department of Housing and Urban Development, as well as from non-federal sponsors.

COTTON & COMPANY LLP



 CPA, CFE
Partner

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING

NATIONAL SCIENCE FOUNDATION
 ORDER # D14PA00035
 PERFORMANCE AUDIT OF COSTS CLAIMED ON NSF AWARDS
 UNIVERSITY OF MICHIGAN

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Cost Breakdown			Total Questioned Costs	
		Direct Costs	Related Indirect Costs ¹	Indirect Costs	Unsupported	Unallowable
1	Salary Costs Exceeding NSF's Allowable Limits	\$ [REDACTED]	\$ [REDACTED]			\$2,242,477
2	Unsupported ACM\$ Requests	[REDACTED] ²			\$360,908	
3	Unallowable Equipment Purchases	[REDACTED]				57,355
4	Unallowable Travel Expenses	[REDACTED]	[REDACTED]			20,656
5	Unsupported Travel Expenses	[REDACTED]	[REDACTED]		<u>2,635</u>	
6	Unallowable Airfare and Entertainment Expenses	[REDACTED]	[REDACTED]			8,905
7	Indirect Costs Improperly Claimed on Participant Support Costs			<u>\$7,203</u>		7,203
8	Unallowable Additional Compensation	[REDACTED]	[REDACTED]			6,603
9	Unallowable Visa Expenses	[REDACTED]	[REDACTED]			<u>3,496</u>
Total		\$ [REDACTED]	\$ [REDACTED]	<u>\$7,203</u>	<u>\$363,543</u>	<u>\$2,346,695</u>

¹Related indirect costs include [REDACTED] and [REDACTED] expenses that UM applied to the questioned direct costs.

²The unsupported ACM\$ requests were drawn down based on the amount of funding remaining on the NSF awards rather than on actual direct or indirect costs incurred; we therefore included all questioned costs under the direct cost category.

APPENDIX B: UNIVERSITY OF MICHIGAN RESPONSE



5000 Wolverine Tower 3003 S. State St.
Ann Arbor, Michigan 48109-1287

734-764-8204 F: 734 647-1932
SponsoredPrograms@umich.edu

September 9, 2016

██████████, CPA, CFE
Partner
Cotton & Company, LLP
635 Slaters Lane, 4th floor
Alexandria, VA 22314

Dear ██████████,

The University of Michigan has reviewed your draft audit report entitled "Performance Audit of Incurred Costs for National Science Foundation (NSF) Awards for the Period October 1, 2011 to September 30, 2014" and, as requested, provides the following comments in response:

Finding 1: Salary Costs Exceeding NSF's Allowable Limits

U-M employees identified as senior personnel inappropriately allocated more than two months (or the maximum number of approved months) of their salaries to NSF within a single year. NSF policies require that awardees obtain specific approval to charge more than two months of a senior personnel member's salary to NSF during a single year, for the employees identified, U-M either did not receive express permission to do so or allocated salaries to NSF awards in excess of the number of months expressly approved by NSF. The auditors are questioning \$2,242,477 of salary, fringe benefits and indirect expenses charged to NSF that exceeded the allocation limits.

U-M Response to Finding 1:

U-M disagrees with the auditor's finding related to salary for senior personnel in excess of NSF's allowable limits.

The NSF Award and Administration Guide (AAG), Chapters II and V, establish when NSF approval is required for budget changes. The AAG in effect during the audit period included instructions for budget change(s), but did not specify a requirement for NSF approval of increases to salary for senior project personnel, unless the increase resulted in a change to the project scope. To provide clarification to awardees, the NSF policy office, through the 2010 Frequently Asked Questions (FAQs), stated that awardees have the authority to rebudget such changes without NSF approval.

NSF PAPPG 15-1, effective December 26, 2014, incorporates the clarification provided by the 2010 FAQs and expressly states in the Grant Proposal Guide, Chapter II, "Under normal rebudgeting authority, as described in AAG Chapters II and V, an awardee can internally approve an increase or decrease in person months devoted to the project after an award is

made, even if doing so results in salary support for senior personnel exceeding the two month salary policy. No prior approval from NSF is necessary as long as that change would not cause the objectives or scope of the project to change.”

Further, NSF’s Cost Analysis and Audit Resolution Branch of the Division of Institution and Award Support has sustained the position of institutions of higher education on similar audit findings in several other recent audits. This action by NSF management supports U-M’s position that rebudgeting of senior personnel salary without NSF prior approval was and is allowable. U-M believes that it has complied with NSF policies and guidance with respect to senior personnel salaries.

Finding 2: Unsupported ACMS Requests

U-M inappropriately requested \$360,908 from NSF’s Award Cash Management System (ACMS) to reimburse expenses that had not yet been incurred. U-M’s final funding requests for six NSF awards were based on the amount of funding remaining on the grant awards, rather than on the amount of actual disbursements that had been, or would be, made within three days, as required by NSF policy. U-M’s accounting records did not support the amounts of these ACMS requests, and U-M should not have claimed or received reimbursement for any funds requested in excess of actual disbursements that had been, or would be, made within three days.

Costs are not being questioned because we determined U-M charged expenses to NSF that were not allocable, allowable or reasonable to NSF awards, but solely because the amounts drawn down in ACMS for these awards were not supported at the time of the actual disbursements.

U-M Response to Finding 2:

U-M disagrees with the auditor’s finding related to unsupported ACMS requests.

NSF often fully funds multi-year projects at award inception with U.S. government appropriations that have fixed expiration dates. They also commonly authorize multiple no-cost time extensions on these awards. This results in instances where an award’s Period of Performance (PoP) extends up to the related appropriation’s fixed expiration date. Annually, U-M receives a notification from NSF’s Grantee Cash Management Section indicating awards that were funded with appropriations scheduled to cancel on 9/30. The communication reflects the date on which the cash management system will be shut down, generally 1 – 2 weeks prior to 9/30. The communication emphasizes that the shutdown date is the last opportunity for U-M to draw funds, even if the PoP of the award extends beyond that date. Accordingly, U-M calculates the projected final expenses expected to be incurred within the award’s PoP, and requests the final payment prior to the shutdown date.

All expenses, for which the funds were requested, were incurred within the approved PoP of the respective awards.

Finding 3: Unallowable Equipment Purchases

The auditors questioned \$57,355 on two NSF awards for equipment expenses that did not appear to be reasonable, allowable, or necessary for accomplishing award objectives and that therefore should not have been charged to NSF.

U-M Response to Finding 3:

U-M disagrees with the auditor's finding related to the following equipment purchases:

- \$33,355 purchase of [REDACTED]

The Research Terms and Conditions (RTC) afford awardees the ability to approve equipment purchases within the last 90 days, approval which the Principal Investigator (PI) obtained prior to initiating the purchase in question. The PI also requested and received approval from the NSF Program Director to redirect award funding to purchase equipment needed to set up her lab at U-M following her transfer from the University of [REDACTED]. As the PI explained, and the NSF Program Director approved, award funds previously budgeted for student support were redirected to equipment and institutional funds were used for the [REDACTED] associated with completing the project.

- \$ [REDACTED] transfer of the net book value of the survey vessel

The NSF approved budget included \$41,000 for the use of a survey vessel as an Other Direct Cost. In 2013, the co-PI from the [REDACTED] Department ([REDACTED]) retired. Subsequent to the co-PI's retirement and per university guidelines, the boat was identified as surplus by [REDACTED] and was to be disposed of accordingly. The PI from the [REDACTED] followed university procedures, and obtained rebudgeting approval, to transfer the asset in lieu of it being sold to an external party. Funding previously budgeted for the use of the vessel was redirected and used to cover the transfer. The survey vessel was essential to accomplishing the objectives of the award.

Finding 4: Unallowable Travel Expenses

U-M inappropriately charged three NSF awards a total of \$20,656 in travel expenses that either did not benefit the awards charged or were for travel that took place after the award's PoP had expired. These travel expenses were unallowable and therefore should not have been allocated to NSF.

U-M Response to Finding 4:

U-M agrees with auditor's finding related to unallowable travel expenses and will take the appropriate steps to remove the costs from the respective awards. U-M believes our internal controls and policies are effective in maintaining compliance with federal regulations and that these travel expenses are isolated incidents.

Finding 5: Unsupported Travel Expenses

U-M was unable to support \$10,603 (\$ [REDACTED] direct costs and \$ [REDACTED] indirect costs) of travel expenses charged to two NSF awards. Without documentation to support the purpose and the amount of the expenses claimed, we were unable to verify that the expenses were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions or applicable federal financial assistance requirements.

U-M Response to Finding 5:

U-M disagrees with the auditor's finding related to the following travel expenses:

- \$5,124 payment to a visiting collaborator as "Service of Others"

The proposed budget reflected a \$[REDACTED] commitment to the collaborator to cover travel expenses related to his work on the project. Documented travel related expenses exceeded the \$[REDACTED] maximum, thus reimbursements to the collaborator were capped at that amount. The \$5,124 payment was one of five travel reimbursements to the collaborator.

- \$1,706 airfare expense for the PI to travel to [REDACTED] University to give a lecture about research on the grant

The expense was charged to the PI's University-issued Purchasing Card. The credit card statement and the PI's explanation of the travel were included in the documentation provided to the auditor. This cost benefited the award to which it was charged.

Finding 6: Unallowable Airfare and Entertainment Expenses

U-M inappropriately charged five NSF awards a total of \$8,905 (\$[REDACTED] direct costs and \$[REDACTED] indirect costs) in business-class airfare and entertainment expenses. Upgraded airfare expenses and entertainment expenses are expressly unallowable under 2 CFR 220, and U-M therefore should not have allocated these amounts to NSF.

U-M Response to Finding 6:

U-M agrees with the following questioned costs on three NSF awards totaling \$7,054 (\$[REDACTED] direct costs and \$[REDACTED] indirect costs):

- \$[REDACTED] for the purchase of business class airfare;
- \$[REDACTED] for the purchase of business class airfare;
- \$[REDACTED] for a student group to participate in a stadium tour.

U-M has issued an updated Travel and Business Hosting Expense Policy that clarifies the rules regarding the use of federal funds for purchase of airfare. The expense for the stadium tour has been removed from the award and the funds returned to NSF.

U-M disagrees with the auditor's finding related to the following expenses:

- \$1,000 expense for a workshop

As described in the proposal, this grant was designed to have Future Undergraduates in Energy Laboratories (FUEL) workshops to target Detroit area middle school students to expose them to principles behind electrochemical-based energy sciences and the notion of pursuing higher education for future careers in the science and engineering sectors. This charge was incurred as part of Workshop #1 ('Getting on the horse') cost. It was the initial workshop that introduced the students to each other, the scientific method of discovery and post-secondary education.

- \$851 expense for a Research Experiences for Undergraduates (REU) summer program event

As described in the proposal, "Social interaction with other summer undergraduate research participants and members is a standard part of summer programs....The U-M

Chemistry, Physics, Pharmacy, Biophysics, and Biology REU Programs make a joint outing to the [REDACTED] Amusement Park in [REDACTED] OH."

Finding 7: Indirect Costs Improperly Claimed on Participant Support Costs

U-M inappropriately claimed \$7,203 in indirect costs related to participant support costs (PSCs) incurred on one NSF award. *NSF's Proposal and Award Policies and Procedures Guide*, Chapter V, Section D.1.b states that NSF generally does not allow awardees to apply indirect costs to expenses paid to or on behalf of participants, however, U-M allocated PSCs to accounts that applied U-M's indirect cost rate. Specifically, in April 2013, U-M charged \$[REDACTED] to NSF Award No. [REDACTED] for foreign travel expenses incurred by students participating in a summer research program sponsored by the award. U-M did not identify the travel expenses as PSC and, as a result, inappropriately charged \$7,203 in indirect costs to NSF.

U-M Response to Finding 7:

U-M agrees with the auditor's finding related to indirect costs improperly claimed on PSCs and will take the appropriate steps to remove the costs from the award. U-M believes our internal controls and policies to be effective in ensuring that PSCs are segregated and not assessed indirect costs, and that this was an isolated incident.

Finding 8: Unallowable Additional Compensation

U-M charged \$5,521 to NSF Award No. [REDACTED] for a retroactive salary adjustment processed after an employee left U-M. The retroactive salary adjustment does not appear to have been reasonable, and U-M therefore should not have allocated the additional costs associated with the adjustment to NSF.

U-M Response to Finding 8:

U-M disagrees with the auditor's finding related to the following additional compensation:

- \$5,521 payroll adjustment (retroactive salary increase) to the [REDACTED] hired as the [REDACTED] ([REDACTED]) on the NSF I-Corps Team Project

The objectives of the I-Corps grant were (i) to evaluate the market for compliance technology protecting electronic medical records and (ii) to develop a more robust prototype of the explanation-based auditing system. There were three team members for the project, the [REDACTED], the PI, and the Team Mentor.

In the second quarter of 2013, the team participated in the [REDACTED] cohort of the I-Corps program. The team made a 'go' decision from the lessons learned during the training. For the remainder of 2013, the [REDACTED] continued 'getting out of the building', speaking with many more compliance officers, and developing the minimum viable product. The [REDACTED] also founded a company, [REDACTED]. The [REDACTED] was hired at a fairly low pay rate compared to other post-docs in the department. The large volume and high quality of work being done by the [REDACTED] justified a substantial pay increase.

Finding 9: Unallowable Visa Expenses

U-M did not allocate expenses incurred for an H-1B visa extension to NSF Award No. [REDACTED] based on the relative benefits received. In July 2012, U-M allocated to the award 100 percent of the \$2,300 in expenses for an H-1B visa extension incurred to support an employee that had overseen the development of software used for this NSF project. The employee did not allocate any of his effort to this NSF award during July 2012, when the expense was incurred, and only allocated a total of [REDACTED] percent of his effort to this award during calendar year 2012.

U-M Response to Finding 9:

U-M disagrees with the auditor's finding related to the following visa expenses:

- \$2,300 payment for legal fees in relation to the visa extension for an employee

The employee was the full-time [REDACTED] of [REDACTED] ([REDACTED]). Funding for the study comes from the NSF, various agencies within the U.S. Department of Health and Human Services, the U.S. Department of Agriculture, the Department of Housing and Urban Development and non-federal sponsors. While the employee's salary was allocated to several funding sources supporting the study, any of the employee's costs were allowable and allocable to all of the funding sources. Therefore, the fees for the visa extension were allowable and allocable to the NSF award.

For each of the audit findings with which U-M concurs, we have initiated the appropriate steps to remove the costs from the NSF awards and to return the funding to NSF.

We believe the audit confirmed the strength and effectiveness of our management systems and internal controls. U-M will continue to maintain our dedication and commitment to managing NSF awards in a compliant manner.

We look forward to working with the NSF Office of Inspector General and the NSF Division of Institution and Award Support to bring this audit to a conclusion, and will be happy to provide additional information regarding any of the questioned costs. Thank you for your consideration.

Sincerely,

[REDACTED]

cc:

[REDACTED]

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 UM incurred on NSF awards for the period from October 1, 2011, to September 30, 2014. The objective of the audit was to determine if costs claimed by UM 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 UM and the NSF OIG. The NSF OIG provided data on each award that UM reported on FFRs and through ACM\$ during our audit period, and UM provided detailed transaction-level data for all costs charged to NSF awards during the period. This resulted in a total audit universe of \$258,020,648 in costs claimed on 1,370 NSF awards.

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

Based on our assessment, we found UM’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 fiscal year 2015 found no reportable instances in which NSF’s financial management systems did not substantially comply with applicable requirements.

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

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

We began our analytics process by reviewing the transaction-level data that UM provided, then used [REDACTED] to combine it with the data provided by the NSF OIG. 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, [REDACTED] descriptions indicating [REDACTED], and [REDACTED].

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

We discussed the results of our initial fieldwork testing and our recommendations for expanded testing with the NSF OIG. Based on the results of this discussion, we used [REDACTED] to select an additional judgmental sample of [REDACTED] transactions, as well as samples for [REDACTED] additional tests focused on [REDACTED] transactions in areas that warranted further sampling. We requested and received supporting documentation for the additional transactions tested, as well as all relevant information required to enable us to perform our [REDACTED] testing, and summarized the results of the additional testing in a final fieldwork summary.

At the conclusion of our fieldwork, we provided our final fieldwork summary to NSF OIG personnel for review. We also provided the summary of results to UM personnel, to ensure that they were aware of each of our findings and did not have any additional documentation available to support the questioned costs identified.

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards, which require us to obtain reasonable assurance that the evidence provided is sufficient and appropriate to support the auditors' findings and conclusions in relation to the audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

APPENDIX D: DETAILED UNALLOWABLE SALARY CALCULATION AND QUESTIONED COSTS FOR FINDING 1

This Appendix to the Report contains non-public information and is not posted.