

Performance Audit of Incurred Costs – Massachusetts Institute of Technology

REPORT PREPARED BY COTTON & COMPANY LLP

NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL

September 11, 2018
OIG 18-1-006





AT A GLANCE

Performance Audit of Incurred Costs – Massachusetts Institute of Technology

Report No. OIG 18-1-006

September 11, 2018

AUDIT OBJECTIVE

The National Science Foundation Office of Inspector General engaged Cotton & Company LLP (C&C) to conduct a performance audit of incurred costs by the Massachusetts Institute of Technology (MIT) for the period May 1, 2014, to April 30, 2017. The auditors tested more than \$14.8 million of the \$256 million of costs claimed to NSF. The objective of the audit was to determine if costs claimed by MIT during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable Federal financial assistance requirements. 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.

AUDIT RESULTS

MIT did not always comply with all Federal, NSF, and MIT regulations and policies when allocating expenses to NSF awards. The auditors questioned \$331,114 of costs claimed by MIT during the audit period. Specifically, the auditors found \$255,745 of inappropriately allocated indirect costs; \$52,524 of inappropriately allocated expenses; \$17,266 of inappropriately allocated equipment expenses; \$4,254 of unsupported expenses; and \$1,325 of unallowable foreign airfare expenses.

RECOMMENDATIONS

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

AUDITEE RESPONSE

MIT agreed with all of the findings, as noted in the report. MIT's response is attached in its entirety to the report as Appendix B.

For further information, contact us at (703) 292-7100 or oig@nsf.gov.



NATIONAL SCIENCE FOUNDATION OFFICE OF INSPECTOR GENERAL

MEMORANDUM

DATE: September 11, 2018

TO: Dale Bell
Director
Division of Institution and Award Support

Jamie French
Director
Division of Grants and Agreements

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

SUBJECT: Audit Report No. 18-1-006, Massachusetts Institute of Technology

This memorandum transmits the Cotton & Company LLP (C&C) report for the audit of costs charged by the Massachusetts Institute of Technology (MIT) to its sponsored agreements with the National Science Foundation during the period May 1, 2014, to April 30, 2017. The audit encompassed more than \$14.8 million of the \$256 million claimed to NSF during the period. The objective of the audit was to determine if costs claimed by MIT during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable 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

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.



NATIONAL SCIENCE FOUNDATION OFFICE OF INSPECTOR GENERAL

We thank your staff for the assistance that was extended to the auditors during this audit. If you have any questions regarding this report, please contact Jae Kim at 703-292-7100 or oig@nsf.gov.

Attachment

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)

**PERFORMANCE AUDIT OF INCURRED COSTS FOR
NATIONAL SCIENCE FOUNDATION AWARDS
FOR THE PERIOD MAY 1, 2014, TO APRIL 30, 2017**

**NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL**

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**NATIONAL SCIENCE FOUNDATION
PERFORMANCE AUDIT OF INCURRED COSTS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)**

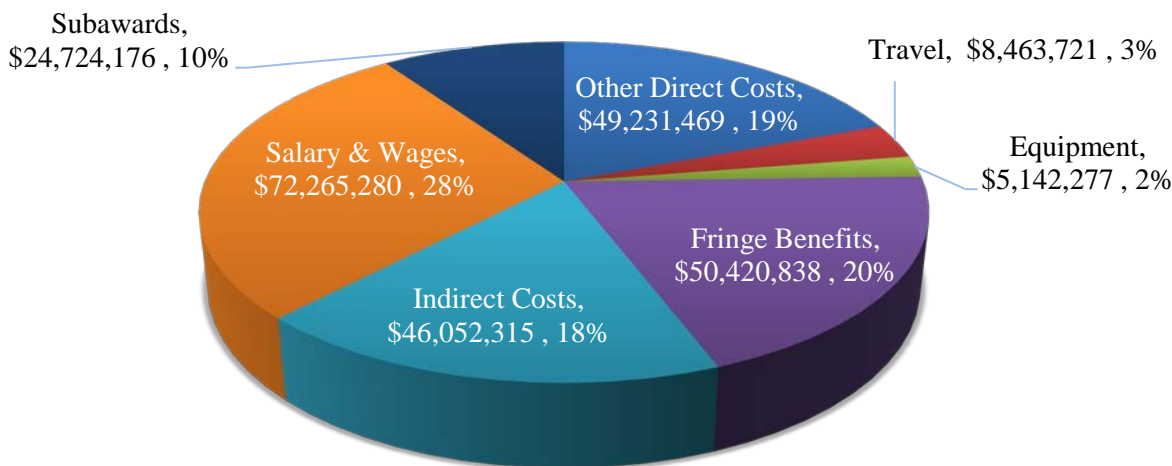
I. BACKGROUND

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

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

NSF OIG engaged Cotton & Company LLP (referred to as "we") to conduct a performance audit of costs incurred by the Massachusetts Institute of Technology (MIT). MIT is an independent, privately endowed university that received 64 percent of its research funding from Federal awards in fiscal year (FY) 2017. As illustrated in Figure 1, MIT's General Ledger (GL) included more than \$256 million of expenses incurred across 811 NSF Awards in support of costs claimed by MIT through NSF's Award Cash Management Service (ACM\$) during our audit period of performance (POP), or May 1, 2014, through April 30, 2017. Figure 1 also shows costs claimed by budget category based on the accounting data that MIT provided.

Figure 1. Costs Claimed by NSF Budget Category, May 1, 2014, through April 30, 2017



Source: Auditor analysis of accounting data provided by MIT.

This performance audit, conducted under Order No. D16PB00549, 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 MIT and NSF OIG. We have included MIT's full response in Appendix B.

II. AUDIT RESULTS

As described in the OSM section of this report, this performance audit included obtaining transaction-level data for all costs that MIT claimed on NSF awards during the audit period. We judgmentally selected a sample of 275 transactions totaling \$10,009,440 for testing, and also performed a cluster test, which involved reviewing an additional \$4,850,462 of indirect costs charged to 50 NSF awards.

MIT did not always comply with all Federal, NSF, and MIT regulations and policies when allocating expenses to NSF awards. It needs improved oversight of the allocation of expenses to NSF awards to ensure costs claimed are reasonable, allocable, and allowable in accordance with those regulations and policies. As a result, we questioned \$331,114 in direct and indirect costs claimed by MIT during the audit period, as follows:

- \$255,745 of inappropriately allocated indirect costs.
- \$52,524 of inappropriately allocated expenses.¹

¹ We identified \$53,382 of costs associated with inappropriately allocated expenses, however, \$858 of indirects associated with these costs are questioned within the \$255,745 of inappropriately allocated indirect costs. Therefore, we are only questioning \$52,524 associated with these inappropriately allocated expenses.

- \$17,266 of inappropriately allocated equipment expenses.
- \$4,254 of unsupported expenses.
- \$1,325 of unallowable foreign airfare expenses.

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

Finding 1: Inappropriate Allocation of Indirect Costs

MIT inappropriately applied \$255,745 in indirect costs to 50 NSF awards as a result of using indirect cost rates higher than rates included in MIT’s approved negotiated indirect cost rate agreements (NICRAs) at the time NSF awarded the grants.

Specifically, when establishing accounts used to accumulate expenses for these awards, MIT set up its accounting system to apply indirect costs based on either the NICRA rates that MIT had included in the grant proposal or the NICRA rates that were in effect at the time that MIT established the cost collector. However, according to 2 Code of Federal Regulations (CFR) 220, Appendix A, Section G.7, and to 2 CFR 200, Appendix III, Section C.7, when identifying and computing indirect rates at Institutes of Higher Education (IHEs), NSF must use the negotiated indirect cost rates in effect at the time of the grant award throughout the life of the award. Accordingly, NSF does not permit IHEs to adjust award levels during a grant’s POP as a result of changes in negotiated rates by quoting the applicable Federal guidance in its Proposal and Award Policies and Procedures Guides (PAPPGs).²

MIT did not have sufficient policies and procedures to ensure that it set up its cost collectors to apply indirect costs using the NICRA rates that were in effect as of the effective date of the grant award, rather than the rates that were in effect when MIT submitted its grant proposal or established the cost collector. We therefore questioned \$255,745 of unallowable indirect costs charged to 50 NSF awards, as follows:

Table 1. Inappropriate Allocation of Indirect Costs

NSF Award No.	Award Effective Date	Actual Indirect Costs Charged*	Appropriate Indirect Costs	Questioned Indirect Costs
	6/1/2008	\$283,702	\$279,545	\$4,157
	6/15/2008	149,241	147,046	2,195
	7/1/2010	297,543	295,356	2,187
	10/1/2010	150,759	149,591	1,168
	7/1/2010	176,568	175,269	1,299
	7/15/2010	66,980	65,946	1,034
	7/1/2010	95,289	94,588	701
	7/1/2010	216,911	215,316	1,595
	7/15/2010	18,946	18,807	139

² See Chapter V, Section D.1.ii.b. of NSF PAPPGs 08-1, 09-1, 09-29, 10-1, 11-1, 13-1, Chapter V, Section D.1.iii of PAPPG 14-1, and Chapter V, Section D.1.b. of PAPPGs 15-1 and 16-1.

NSF Award No.	Award Effective Date	Actual Indirect Costs Charged*	Appropriate Indirect Costs	Questioned Indirect Costs
	7/1/2010	165,317	163,832	1,485
	7/1/2010	133,190	132,211	979
	7/1/2010	156,923	155,769	1,154
	7/1/2010	130,554	129,594	960
	7/1/2010	46,387	46,046	341
	7/1/2011	51,730	46,365	5,365
	7/1/2011	200,742	179,924	20,818
	7/1/2011	144,211	129,256	14,955
	7/1/2011	102,086	91,500	10,586
	7/1/2011	105,374	94,446	10,928
	7/1/2011	91,948	82,413	9,535
	7/1/2011	86,294	77,345	8,949
	7/1/2011	88,749	79,581	9,168
	7/1/2011	48,597	44,466	4,131
	7/1/2011	113,212	101,472	11,740
	7/1/2011	143,650	128,753	14,897
	7/1/2011	166,414	149,157	17,257
	7/1/2011	146,946	131,707	15,239
	7/1/2011	173,112	155,159	17,953
	7/1/2011	133,380	119,548	13,832
	8/15/2012	95,548	88,441	7,107
	8/1/2012	463,764	429,270	34,494
	7/1/2016	20,675	20,231	444
	7/1/2016	12,847	12,549	298
	8/1/2016	8,170	7,981	189
	7/1/2016	4,690	4,581	109
	9/1/2016	43,651	42,637	1,014
	7/1/2016	14,819	14,475	344
	9/1/2016	26,510	25,895	615
	9/1/2016	17,577	17,169	408
	7/1/2016	19,858	19,397	461
	7/1/2016	14,880	14,534	346
	9/1/2016	6,849	6,690	159
	7/1/2016	27,497	26,859	638
	9/1/2016	25,570	24,977	593
	7/1/2016	12,019	11,740	279
	9/1/2016	15,369	15,012	357
	7/15/2016	13,945	13,621	324
	7/1/2016	19,793	19,334	459
	7/1/2016	86,858	84,842	2,016
	7/1/2016	14,819	14,475	344
Total Questioned Costs				<u>\$255,745</u>

Source: Auditor summary of questioned transactions.

* Total indirect costs charged to each NSF Award from its inception through the end of our audit POP, April 30, 2017.

Recommendations

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

1. Repay NSF the \$255,745 of questioned costs.
2. Calculate and repay to NSF all over-claimed indirect costs charged to these awards since the end of our audit POP.
3. Update the cost collectors set up for each active NSF award identified above to ensure indirect costs are appropriately applied to each of these awards in future periods.
4. Strengthen the administrative and management controls and processes over establishing indirect cost rates for Federal awards to ensure that MIT applies costs at the rates that were in effect at the time of award.

MIT Response: MIT concurred with this finding and noted that it had changed the indirect cost rates and made adjustments for all identified and still active awards in its systems, such that each award now reflects the correct amount and rate of indirect costs. MIT also agreed to refund all overcharged indirect cost amounts associated with identified but closed awards. MIT noted that the root of this issue is the timing of award receipt/setup and the execution of indirect cost rate agreements. MIT stated that it will strengthen its procedures to ensure that (1) all awards originally set up with the prior year's indirect cost rate are adjusted to the correct rate when rate agreements are executed and that (2) adjustments will be made to ensure that billed indirect costs reflect only the appropriate rate for the term of the award.

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

Finding 2: Inappropriate Allocation of Expenses

MIT did not allocate expenses to NSF awards based on the relative benefits received by the awards, as required by 2 CFR 220, Appendix A, Section C.4 and 2 CFR §200.405.³ Specifically, MIT inappropriately allocated \$53,382 to 10 NSF awards, as follows:

- ***Travel Not Related to Award***
 - In ██████████ 2015, MIT charged NSF Award No. ██████████ for \$20,519 in travel expenses that the Principal Investigator (PI) incurred to travel to ██████████ for 1.5

³ Both 2 CFR 220 and 2 CFR 200 note that a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to that cost objective in accordance with the relative benefits received.

months (from [REDACTED], 2015) to complete a multi-week visiting research appointment at [REDACTED]. The PI stated that the trip benefitted the NSF award; however, the PI did not report any international travel or collaborations with [REDACTED] in the annual reports submitted for this award. Further, the grant budget did not include any funding for travel, nor did it include any funding related to international research collaborations. Because the grant budget did not include funding to support international travel and because this trip does not appear to have directly benefitted the NSF award, MIT should not have charged the travel costs to this NSF award.

- In October 2015, MIT charged NSF Award No. [REDACTED] for \$9,626 in travel expenses that the PI incurred to travel from [REDACTED] to [REDACTED], from [REDACTED] to [REDACTED] and from [REDACTED] back to [REDACTED]. While the conference the PI attended in [REDACTED] was a grant-related conference; neither the work that the PI performed in [REDACTED] nor the meeting that the PI attended in [REDACTED] related to this NSF award. Accordingly, MIT should only have charged the award for the \$825 in travel expenses the PI incurred while in [REDACTED].
- In June 2016, MIT charged NSF Award No. [REDACTED] for \$7,564 in travel expenses that a post-doctoral scholar (post-doc) incurred to travel to [REDACTED] to present at a conference. The PI stated that these presentations benefitted the NSF award; however, neither of the papers presented related to this NSF award, nor did the PI identify the papers as award-related publications in the annual report. Further, none of the post-doc's effort (salary) was allocated to this award, and MIT did not report the post-doc as a participant on this award in the year the travel occurred. Because the post-doc's travel does not appear to have benefitted this NSF award, MIT should not have charged the travel costs to this award.
- In April 2014 MIT charged NSF Award No. [REDACTED] for \$5,104 in travel expenses that a post-doc incurred to attend a conference in [REDACTED]. MIT had previously allocated these expenses to another sponsored project to which this post-doc had allocated 100 percent of their effort; however, 23 days before NSF Award No. [REDACTED] expired, MIT processed a cost transfer to reallocate the expenses to the award, which had not yet been fully expended. Because MIT did not identify this post-doc as a participant on this award and the post-doc did not allocate any effort to the award, MIT should not have charged these travel expenses to this award.
- In February 2017, MIT charged NSF Award No. [REDACTED] for \$9,390 in travel expenses that the PI incurred to travel to [REDACTED] to perform research related to two sponsored projects. Although the trip benefitted two separate awards, MIT allocated 100 percent of the expenses incurred to NSF Award No. [REDACTED]. MIT has agreed to remove 50 percent of this expense, or \$4,695, from this award.
- In June 2014, MIT charged NSF Award No. [REDACTED] for \$3,532 in travel expenses that an award participant incurred to travel to [REDACTED], and

██████████. The participant traveled to ██████████ to participate in an award-related meeting; however, the travel to ██████████ did not benefit this NSF award. Because MIT was unable to support the percentage of this expense that benefitted NSF Award No. ██████████, it agreed to remove the entire expense from this award.

- In August 2016, MIT charged NSF Award No. ██████████ for \$4,132 in travel expenses that the PI incurred to attend a grant-related conference. The PI's attendance at this conference benefitted the award; however, \$659 of the travel expenses related to airfare for the PI's spouse. Because the PI's spouse was not a participant on the award, MIT should not have charged their airfare to NSF.
- In July 2014, MIT charged NSF Award No. ██████████ for \$1,910 in airfare for a graduate student for a trip that included both personal travel to ██████████ and grant-related travel to participate in a summer school program at the ██████████. The personal travel expenses increased the cost charged to the NSF award by \$482; however, MIT did not appropriately remove this amount from the expense report. Because the personal travel did not benefit the award, MIT should not have charged these travel expenses to NSF.
- In July 2014, MIT charged NSF Award No. ██████████ for \$6,876 in travel expenses that a graduate student incurred to travel to ██████████ and ██████████. The graduate student traveled to ██████████ to present a paper at an award-related conference; however, the travel to ██████████ did not appear to benefit this NSF award. The travel to ██████████ increased the cost charged to the NSF award by \$506. Because this travel did not appear to benefit the award, MIT should not have charged these costs to NSF.

- ***Unallocable Stipend Expense***

- In May 2014, MIT charged NSF Award No. ██████████, MIT's active Graduate Research Fellowship Program (GRFP) award, for a \$1,520 stipend provided to a graduate student. MIT erroneously charged this stipend to this award, as the student who received the stipend was not an active GRFP fellow. MIT has agreed to remove this expense from the award.

MIT does not have proper controls in place to ensure that it detects errors when expenses are posted and that it allocates costs to projects based on the relative benefit the projects receive. MIT overdrew funds on NSF awards for expenses that were not reasonable, appropriate, or allocable to the awards. As such, we are questioning \$52,524 of inappropriately allocated expenses, as follows:

Table 2. Inappropriate Allocation of Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
██████████ 2015 Travel Not Related to Award	██████████	2016	\$19,661*
October 2015 Travel Not Related to Award	██████████	2016	8,801
June 2016 Travel Not Related to Award	██████████	2016	7,564
April 2014 Travel Not Related to Award	██████████	2014	5,104
February 2017 Travel Not Related to Award	██████████	2017	4,695
June 2014 Travel Not Related to Award	██████████	2014	3,532
August 2016 Travel Not Related to Award	██████████	2017	659
July 2014 Travel Not Related to Award	██████████	2015	482
July 2014 Travel Not Related to Award	██████████	2015	506
May 2014 Unallocable Stipend Expense	██████████	2014	1,520
Total Questioned Costs			\$52,524

Source: Auditor summary of questioned transactions.

*MIT charged \$20,519 of expenses to NSF Award No. ██████████ associated with this trip; however, \$858 of indirect costs associated with these travel expenses are questioned in Finding 1 and therefore have not been included in the questioned costs for Finding 2.

Recommendations

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

1. Repay NSF the \$52,524 of questioned costs.
2. Strengthen the administrative and management controls and processes over allocating travel expenses to sponsored funding sources. Processes could include:
 - a. Requiring travelers to specifically justify how each trip benefits the award charged when completing their expense reports.
 - b. Requiring departments to maintain documentation that supports the allocation methodology used to allocate expenses among multiple funding sources.
 - c. Requiring departments to perform additional reviews to ensure that employees do not allocate travel expenses to awards for which the employees have not allocated any effort.
 - d. Requiring additional reviews of expense reports that include both award-related travel and personal travel to ensure that the personal travel did not increase the cost charged to NSF.

MIT Response: MIT agreed to repay the \$52,524 of inappropriately allocated expenses. MIT also noted that it will work to improve compliance with MIT and sponsor policies relating to

travel expenditures by (1) intensifying the Travel and Card Services Group’s (TCS’s) efforts to help travelers and reviewers of travel expense reports understand relevant policies and best practices; (2) exploring opportunities to capture more information about the purpose and reasonableness of travel costs; (3) utilizing new tools and techniques to improve TCS’s review of travel expense reports; and (4) enhancing reporting of activities and trends relating to compliance and non-compliance with policies.

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

Finding 3: Equipment Expenses Charged at the End of the Award Period

In January 2017, less than 1 month before the 5-year award expired, MIT charged \$17,266 to NSF Award No. [REDACTED], which did not include any funding for equipment, to purchase [REDACTED]. The PI stated that [REDACTED] had purchased this equipment “to [REDACTED] grant”; however, the PI did not receive this equipment until the final 2 weeks of the grant period. The equipment therefore does not appear to have provided sufficient benefit to this award to justify allocating the cost to the award. Accordingly, MIT should not have allocated costs associated with the purchase of this equipment to this NSF award.

MIT did not have sufficient policies and procedures in place to ensure that it did not spend down funds at the end of the award period, or that it allocated costs to projects based on the proportional benefit the projects receive, as required by 2 CFR 220, Appendix A, Section C.4. As a result, MIT personnel charged NSF for equipment that did not appear to be reasonable, allowable, or necessary for accomplishing the award objectives. We are therefore questioning \$17,266 of expenses, as follows:

Table 3. Equipment Expenses Charged at the End of the Award Period

Description	NSF Award No.	Fiscal Year	Questioned Costs
Inappropriately Allocated Equipment	[REDACTED]	2017	\$17,266

Source: Auditor summary of questioned transactions.

Recommendations

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

1. Repay NSF the \$17,266 of questioned costs.
2. Strengthen the administrative and management controls and processes over allocating equipment expenses to sponsored projects. Processes could include requiring MIT to specifically review all equipment purchased less than 90 days before the end of an award period to evaluate whether the costs comply with MIT’s procurement policies and with appropriate Federal and sponsor-specific regulations.

MIT Response: MIT agreed to repay the \$17,266 of inappropriately allocated equipment expenses. MIT also noted that it emphasizes that charges at the end of an award must benefit the award in its Sponsored Program Administration training program for department administrators, but it will review additional avenues for strengthening internal controls surrounding charging non-salary items to awards near the end of an award term.

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

Finding 4: Unsupported Expenses

MIT did not provide support for \$4,254 in expenses charged to NSF awards during the audit period, as follows:

- ***Insufficient Documentation to Support Costs:*** In June 2016, MIT charged NSF Award No. [REDACTED] for \$17,396 associated with hosting a [REDACTED] Workshop in [REDACTED]. This workshop benefitted the objectives of the award; however, MIT was only able to provide support for \$13,234 of the expenses charged, and, therefore, the remaining \$4,162 of the expense is unsupported.
- ***Unsupported Hotel Expenses:*** In January 2016, MIT charged NSF Award No. [REDACTED] for \$911 in lodging expenses incurred to host faculty from [REDACTED] while the faculty attended award-related workshops. However, the reservation from the lodging provider only supported \$819 in lodging expenses, resulting in a \$92 discrepancy between the amount paid and the amount supported by the reservation⁴.

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

MIT does not have appropriate policies and procedures in place to ensure that documentation provided or retained to support costs charged to Federal awards is sufficient to support the allowability of the sampled expenses. As a result, MIT charged NSF awards for expenses that it was unable to adequately support as allowable. We are therefore questioning \$4,254 of expenses, as follows:

⁴ As a result of our audit, MIT contacted the lodging provider and received a refund for the unsupported \$92.

Table 4. Unsupported Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
Insufficient Documentation to Support Costs	██████████	2015	\$4,162
Refund Not Applied to Amount Charged	██████████	2016	92
Total Questioned Costs			<u>\$4,254</u>

Source: Auditor summary of questioned transactions.

Recommendations

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

1. Repay NSF the \$4,254 of questioned costs.
2. Strengthen the administrative and management controls and processes over processing expenses on NSF awards. Processes could include:
 - a. Ensuring that all costs transferred to sponsored projects are adequately supported by documentation that supports the total costs incurred.
 - b. Requiring travelers to support all hotel expenses with a lodging receipt provided by the hotel after the traveler completes their stay.

MIT Response: MIT agreed to repay the \$4,254 of unsupported expenses but noted that the identified instances of non-compliance appear to represent anomalies and unique events, not systemic issues. MIT believes that its current and ongoing processes continue to provide assurance that charges to Federal awards are appropriately supported. However, MIT has communicated the findings to the responsible parties so that corrective action plans can be made within their departments.

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

Finding 5: Travel Not in Compliance with the Fly America Act

MIT inappropriately charged NSF Award No. ██████████ for \$1,325 in foreign airfare expenses. Specifically, MIT charged the award for airfare that was not in compliance with the *Fly America Act*.⁵ In October 2016, MIT charged the award for \$4,815 in travel expenses that the Co-PI incurred to travel to ██████████, to host a grant-related workshop and to perform other grant-related activities. The travel benefitted the objectives of this award; however, the PI’s departing

⁵ 49 U.S.C. 40118

flight from [REDACTED] to [REDACTED] was provided by [REDACTED], which is not a U.S. flag carrier. MIT charged NSF \$1,325 for the airline ticket for [REDACTED].

MIT's Travel Planning and Expensing policies and Chapter VI, Section F.b of NSF PAPPG 15-1 requires travelers to comply with the *Fly America Act*, which requires travelers to use U.S. flag carriers if they are traveling on funds provided by the Federal government regardless of cost or convenience, with limited exceptions.⁶

MIT did not have appropriate procedures in place to ensure that it reviewed foreign travel expenses to verify that claimed costs complied with all relevant MIT and Federal policies before charging the travel costs to NSF. As a result, MIT inappropriately charged unallowable foreign airfare expenses to NSF awards. We are therefore questioning \$1,325 of expenses, as follows:

Table 5. Travel Not in Compliance with the Fly America Act

Description	NSF Award No.	Fiscal Year	Questioned Costs
Unallowable Foreign Airfare Expenses	[REDACTED]	2017	\$1,325

Source: Auditor summary of questioned transactions.

Recommendations

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

1. Repay NSF the \$1,325 of questioned costs.
2. Strengthen the administrative and management procedures over allocating travel expenses to sponsored projects. Procedures could include requiring that MIT review all foreign airfare purchases for compliance with the *Fly America Act* before charging the expenses to a federally sponsored project.
3. Strengthen the controls over processing expenses allocated to cost categories that accumulate expenses that may be expressly unallowable under 2 CFR 220, including foreign airfare.

MIT Response: MIT agreed to repay the \$1,325 of unallowable foreign airfare expenses and noted that it will review and revise its training programs related to travel and its travel expense

⁶ The Co-PI purchased an airline ticket on [REDACTED] because (1) [REDACTED] has better service and more legroom for coach passengers and (2) using [REDACTED] is more convenient than using a U.S. carrier because [REDACTED] flies through the [REDACTED] Airport, rather than the [REDACTED] Airport, which has less delays and more connections. As neither of these justifications represents an allowable exception for use of a foreign air carrier, the purchase does not comply with the *Fly America Act*.

report screening procedures to ensure that they appropriately emphasize compliance with the *Fly America Act*.

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

Finding 6: Non-Compliance with MIT's Expense Reporting Policy

We identified 14 instances in which MIT employees did not submit travel reimbursement documentation within the required timeframe after completing travel related to NSF awards. MIT's Post Trip Expense Reporting policy requires travelers to submit expense reports within 30 days of completing the trip; however, MIT does not have appropriate procedures in place to enforce this policy. Although this issue did not result in any questioned costs, we noted the delays in submitting expense reports and travel reimbursement documentation as instances of non-compliance with MIT's established travel policy.

Recommendations

We recommend that MIT:

1. Strengthen the administrative and management procedures in place surrounding the submission of expense reports. Procedures could include:
 - a. Requiring periodic training for PIs and other personnel responsible for booking travel on sponsored awards.
 - b. Not allowing personnel to submit expense reports outside of the allowable 30-day timeframe without a justification and specific approval.

MIT Response: MIT concurred with this finding and noted that it is evaluating extending the submission date for travel expense reports to 60 days after the completion of a trip, based on experience indicating that travelers and other staff need more time to prepare and review these reports.

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

Finding 7: Non-Compliance with MIT's Travel Policy

We identified five instances in which MIT employees did not purchase airfare related to NSF awards within the timeframe recommended in MIT's policies. MIT's Travel Policy states that travelers should purchase airfare at least 14 days in advance; however, MIT does not have appropriate procedures in place to enforce this policy.

Table 6. Non-Compliance with MIT’s Travel Policy

NSF Award No.	Date of Flight	Date Airfare was Purchased	No. of Days in Advance
██████████	██████████ 2014	██████████ 2014	12
██████████	██████████ 2014	██████████ 2014	2
██████████	██████████ 2015	██████████ 2015	3
██████████	██████████	██████████ 2016	11
██████████	██████████ 2014	██████████ 2014	1

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

Although this issue did not result in any questioned costs, we noted that purchasing airfare less than 14 days in advance prevents MIT from taking advantage of advance purchase discounts and often results in MIT charging higher airfare costs to sponsored awards.

Recommendations

We recommend that MIT:

1. Strengthen the administrative and management processes and procedures over booking travel. Processes could include:
 - a. Providing periodic training for PIs and other personnel responsible for booking travel on sponsored awards.
 - b. Requiring personnel to provide a justification for why they were unable to purchase airfare more than 14 days in advance and to obtain approval from appropriate personnel before charging the expense to a sponsored project.

MIT Response: MIT concurred with this finding and noted that purchasing airline tickets at least 14 days in advance is considered a “best practice” but not a requirement by MIT. However, MIT will continue to stress the importance of early booking, where possible and appropriate, in its travel training programs.

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

Finding 8: Lack of Documentation for Constructive Airfare Costs

We identified four instances in which MIT allowed employees to combine personal travel with business-related travel but did not properly obtain or document the constructive airfare cost associated with the business portion of the travel to verify that the personal travel expenses did not increase the costs charged to NSF awards. MIT does not have sufficient policies or procedures in place to ensure that personnel traveling for both business and personal purposes are only charging sponsors for costs related to the business portion of the trip, in accordance with allocability principles under 2 CFR 220, Appendix A, Section C.4. We are not questioning costs in these instances, as the costs incurred appeared reasonable, however, we are noting a

compliance exception as we were unable to verify that MIT did not overcharge NSF for airfare expenses in these instances based on the documentation maintained.

Recommendations

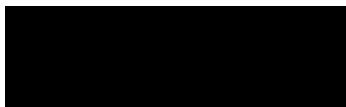
We recommend that MIT:

1. Strengthen the administrative and management controls and processes over booking travel and submitting travel reimbursements. Processes could include:
 - a. Requiring travelers to produce constructive airfare costs for all travel requests that include personal travel and reviewing the costs to ensure that MIT only charges sponsored projects for business-related travel.
 - b. Providing periodic training for PIs and other personnel responsible for booking travel on sponsored awards.

MIT Response: MIT concurred with this finding and noted that it will review and revise its training programs related to travel to ensure that emphasis is placed on maintaining appropriate documentation of constructive costs where necessary. MIT also noted that it will strengthen its central review of travel expense reports to ensure that documentation clearly accounts for constructive costs and the allocation method is reasonable where personal travel is noted.

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

COTTON & COMPANY LLP



Michael W. Gillespie, CPA, CFE
Partner

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING

NATIONAL SCIENCE FOUNDATION
ORDER # D16PB00549
PERFORMANCE AUDIT OF COSTS CLAIMED ON NSF AWARDS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Questioned Costs		Total
		Unsupported	Unallowable	
1	Inappropriate Allocation of Indirect Costs	\$0	\$255,745	\$255,745
2	Inappropriate Allocation of Expenses	0	52,524	52,524
3	Equipment Expenses Charged at the End of the Award Period	0	17,266	17,266
4	Unsupported Expenses	4,254	0	4,254
5	Travel Not in Compliance with the Fly America Act	0	1,325	1,325
6	Non-Compliance with MIT's Expense Reporting Policy	0	0	0
7	Non-Compliance with MIT's Travel Policy	0	0	0
8	Lack of Documentation for Constructive Airfare Costs	<u>0</u>	<u>0</u>	<u>0</u>
Total		<u>\$4,254</u>	<u>\$326,860</u>	<u>\$331,114</u>

APPENDIX B: MASSACHUSETTS INSTITUTE OF TECHNOLOGY RESPONSE

Michelle D. Christy
Senior Director of Sponsored Programs



Massachusetts Institute of Technology
77 Massachusetts Avenue, Building NE18-901
Cambridge, Massachusetts 02139-4307

Office of Sponsored Programs

Phone 617.324.9022
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August 24, 2018

Michael W. Gillespie
Cotton & Company L.L.P.
635 Slater Lane, 4th Floor
Alexandria, VA 22314

Dear Sir:

The Massachusetts Institute of Technology (MIT) has received and reviewed the audit report, "Performance Audit of Incurred Costs for National Science Foundation Awards for the Period May 1, 2014, to April 30, 2017," dated August 1, 2018, as drafted by Cotton & Company on behalf of the National Science Foundation (NSF) Office of Inspector General. Comments on each audit finding are detailed below.

Finding 1: Inappropriate Allocation of Indirect Costs

MIT concurs with this audit finding.

F&A rates on all identified and still active awards have been changed in MIT's systems and adjustments have been made, such that each award now reflects the correct F&A amount and rate. MIT will refund all overcharged F&A amounts associated with identified but closed awards.

The root of this issue is the timing of award receipt/setup and execution of F&A rate agreements. For instance, an award received in mid-June, with an effective date of July 1 is setup in MIT's systems upon receipt and will often, due to timing issues with the receipt of F&A agreements, reflect the F&A rate in effect at the date of award receipt rather than the rate in effect on the effective date of the award.

MIT will strengthen its procedures to ensure that all awards originally setup with the prior year's F&A rate are adjusted to the correct rate when rate agreements are executed and that adjustments will be made to ensure billed F&A reflects only the appropriate rate for the term of the award.

Finding 2: Inappropriate Allocation of Expenses

MIT concurs with this audit finding and will refund all questioned cost to the government.

The majority of questioned costs relate to travel where the purpose of the trip and its relationship to the specific grant charged was not sufficiently documented and thus allocated to an award inappropriately. MIT policies related to travel on sponsored awards are clear that all such travel must be directly related to the award being charged.

MIT will work to improve compliance with Institute and sponsor policies relating to travel expenditures by:

- Intensifying the Travel and Card Services Group's (TCS's) efforts to help travelers and reviewers of travel expense reports understand Institute and sponsor policies and best practices with respect to expensing travel, including the allocation of travel expenses to sponsored funding sources and approval protocols to ensure appropriate allocation, through training initiatives and the dissemination of information and materials using VPF's website and other channels of communication. One of the areas of focus will be education and training on allocating and reviewing expenses for expense reports that include both award-related and personal travel (to ensure the personal travel is not charged to an award);
- Exploring opportunities to efficiently and effectively capture more information about the purpose and reasonableness of travel costs as part of the travel expensing process, including the relationship of travel to particular awards, to better position approvers at all levels to promote compliance;
- Utilizing new tools and data analysis techniques to improve the precision and efficiency of TCS's review of travel expense reports (for example, TCS is currently commencing a pilot initiative to use Concur's "Detect" tool to analyze travel expense reports); and
- Enhancing reporting of activities and trends relating to compliance and non-compliance with Institute and sponsor policies.

Finding 3: Equipment Expenses Charged at the End of the Award Period

MIT concurs with this audit finding and will refund all questioned cost to the government.

The instance of non-compliance identified by NSF represents a rare case in which the PI made a strong justification that without such equipment the science/progress on the award would be incomplete. This led to approval of the charge at the department level. Charges at the end of the award must benefit the award. This principle is included and emphasized heavily in the SPA training program (Sponsored Program Administration) which is a one day training for department administrators that extends over several months. MIT believes that the current training is sufficient, but will review additional avenues for strengthening our internal controls surrounding charging non salary items to awards near the end of an award term.

Finding 4: Unsupported Expenses

MIT concurs with this audit finding and will refund all questioned cost to the government.

The instances of non-compliance identified by NSF appear to represent anomalies and unique events, not systemic issues. MIT has communicated the findings to the specified responsible parties, so they are informed and can make corrective action plans within their department. Overall, MIT believes that its current and ongoing processes continue to provide assurance that charges to Federal awards are appropriately supported.

Finding 5: Travel Not in Compliance with the Fly America Act

MIT concurs with this audit finding and will refund all questioned cost to the government.

MIT policies related to travel on sponsored awards are clear that the Fly America Act is a prime concern with all foreign travel charged to Federal grants. MIT views this issue as being primarily training related and will review and revise its training programs related to travel and its travel expense

report screening procedures to ensure that they appropriately emphasize compliance with the Fly America Act.

Finding 6: Non-Compliance with MIT's Expense Reporting Policy

MIT concurs with this audit finding.

MIT is evaluating extending the submission date for travel expense reports to 60 days after the completion of a trip, based on experience indicating that travelers and other staff need more time to prepare and review these reports. Failure to provide the reports within 60 days results in a notification to the traveler and approver that the report is overdue. Failure to expense travel after this notification and an additional warning results in suspension of the traveler's (or the relevant department's) Travel Card.

Finding 7: Non-Compliance with MIT's Travel Policy

MIT concurs with this audit finding.

MIT travel policy contains the statement, "It is strongly encouraged that reservations for airline tickets be made as soon as possible (at least 14 days) so travelers can obtain advance purchase discounts." This is considered "best practice" but not a requirement by MIT. Experience has shown that there can be many reasons, including availability of colleagues and access to equipment at remote sites, which necessitate flexible travel dates and preclude advance purchases of airfare. MIT will continue to stress the importance of early booking, where possible and appropriate, in its travel training programs.

Finding 8: Lack of Documentation for Constructive Airfare costs

MIT concurs with this audit finding.

MIT will review and revise its training programs related to travel ensuring that emphasis is placed on maintaining appropriate documentation of constructive costs where necessary and will strengthen its central review of travel expense reports to ensure that, where personal travel is noted, documentation clearly accounts for constructive costs and the allocation method is reasonable.

If you have any questions, or require further information regarding the above, please contact me directly or [REDACTED]@mit.edu --- 617.258. [REDACTED] of my staff.

Sincerely,

[REDACTED]
Michelle D. Christy
Senior Director of Sponsored Programs

Cc: M. Zuber - Vice President for Research
K. McGrath – Assistant Director of Travel and Procurement Operations
G. O'Toole – Director of Financial Operations
G. Shor – Vice President for Finance
MIT Office of Cost Analysis

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 MIT incurred on NSF awards for the period from May 1, 2014, to April 30, 2017. The objective of the audit was to determine if costs claimed by MIT 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 MIT and NSF OIG. NSF OIG provided award data that MIT reported through ACM\$ during our audit period. MIT provided detailed transaction-level data to support all costs charged to NSF awards during the period. This resulted in a total audit universe of \$256,300,076 in costs claimed on 811 NSF awards.

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

Based on our assessment, we found MIT’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.

MIT 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 MIT’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 MIT’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 MIT’s internal control over award financial reporting and administration. Accordingly, we do not express an opinion on the effectiveness of MIT’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 MIT’s system that warranted focus during our testing.

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

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

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

We discussed the results of our initial fieldwork and our recommendations for expanded testing with NSF OIG personnel. Based on the results of this discussion, we used IDEA software to select an additional judgmental sample of 25 travel transactions. We also performed a cluster test to examine the application of indirect cost rates on 50 NSF awards. We requested and received supporting documentation for the additional transactions, as well as the relevant information to support our cluster testing. We performed our test procedures and summarized the results in our final fieldwork summary.

At the conclusion of our fieldwork, we provided a summary of our results to NSF OIG personnel for review. We also provided the summary of results to MIT 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.



NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL