

Performance Audit of Incurred Costs – Yale University

REPORT PREPARED BY COTTON & COMPANY LLP

NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL

August 11, 2020
OIG 20-1-007





AT A GLANCE

Performance Audit of Incurred Costs – Yale University

Report No. OIG 20-1-007

August 11, 2020

AUDIT OBJECTIVE

The National Science Foundation Office of Inspector General engaged Cotton & Company LLP (C&C) to conduct a performance audit of incurred costs at Yale University (Yale) for the period February 1, 2016, to January 31, 2019. The auditors tested approximately \$3.9 million of the more than \$96 million of costs claimed to NSF. The objective of the audit was to evaluate Yale's award management environment to determine whether any further audit work was warranted, and to perform additional audit work, as determined appropriate. A full description of the audit's objective, scope, and methodology is attached to the report as Appendix C.

AUDIT RESULTS

The report highlights concerns about Yale's compliance with certain Federal and NSF regulations, NSF award terms and conditions, and Yale policies and procedures. The auditors questioned \$251,973 of costs claimed by Yale during the audit period. Specifically, the auditors found \$108,144 of expressly unallowable expenses charged to NSF awards, \$83,309 of expenses not appropriately allocated to NSF awards, \$39,850 of consultant costs not supported by an executed service agreement, \$15,252 of internal service provider expenses not appropriately billed, and \$5,418 of inappropriately applied indirect costs. The auditors also identified three compliance related findings for which there were no questioned costs; accounting system unable to adequately identify expenses related to costs drawn down in ACM\$, incorrect application of indirect cost rates, and non-compliance with Yale's internal policies and/or procedures. C&C is responsible for the attached report and the conclusions expressed in this report. NSF OIG does not express any opinion on the conclusions presented in C&C's audit report.

RECOMMENDATIONS

The auditors included 8 findings in the report with associated recommendations for NSF to resolve the questioned costs and to ensure Yale strengthens administrative and management controls.

AUDITEE RESPONSE

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

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



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

MEMORANDUM

DATE: August 11, 2020

TO: Dale Bell
Director
Division of Institution and Award Support

Jamie French
Director
Division of Grants and Agreements
[REDACTED]

FROM: Mark Bell
Assistant Inspector General
Office of Audits

SUBJECT: Audit Report No. 20-1-007, Yale University

This memorandum transmits the Cotton & Company LLP (C&C) report for the audit of costs charged by Yale University (Yale) to its sponsored agreements with the National Science Foundation during the period February 1, 2016, to January 31, 2019. The audit encompassed approximately \$3.9 million of the more than \$96 million claimed to NSF during the period. The objective of the audit was to evaluate Yale's award management environment to determine whether any further audit work was warranted, and to perform additional audit work, as determined appropriate. A full description of the audit's objective, scope, and methodology is attached to the report as Appendix C.

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

OIG Oversight of the Audit

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

- reviewed C&C's approach and planning of the audit;

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

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

Attachment

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YALE UNIVERSITY

**PERFORMANCE AUDIT OF INCURRED COSTS FOR
NATIONAL SCIENCE FOUNDATION AWARDS FOR THE PERIOD
FEBRUARY 1, 2016, THROUGH JANUARY 31, 2019**

**NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL**

TABLE OF CONTENTS

I. BACKGROUND.....1

II. AUDIT RESULTS.....2

FINDING 1: UNALLOWABLE EXPENSES3

FINDING 2: INAPPROPRIATELY ALLOCATED EXPENSES 12

FINDING 3: PROFESSIONAL SERVICES AGREEMENT NOT APPROPRIATELY EXECUTED 17

FINDING 4: INTERNAL SERVICE PROVIDER RATES NOT APPROPRIATELY BILLED 19

FINDING 5: INDIRECT COSTS NOT APPROPRIATELY APPLIED 24

FINDING 6: ACCOUNTING SYSTEM UNABLE TO ADEQUATELY IDENTIFY EXPENSES RELATED TO COSTS
DRAWN DOWN IN ACMS.....25

FINDING 7: INCORRECT APPLICATION OF INDIRECT COST RATES26

FINDING 8: NON-COMPLIANCE WITH YALE POLICIES28

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING.....36

APPENDIX B: YALE UNIVERSITY RESPONSE.....38

APPENDIX C: OBJECTIVES, SCOPE, AND METHODOLOGY.....49

APPENDIX D: TABLE 4 COMPLIANCE EXCEPTION DETAILS53

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

I. BACKGROUND

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

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

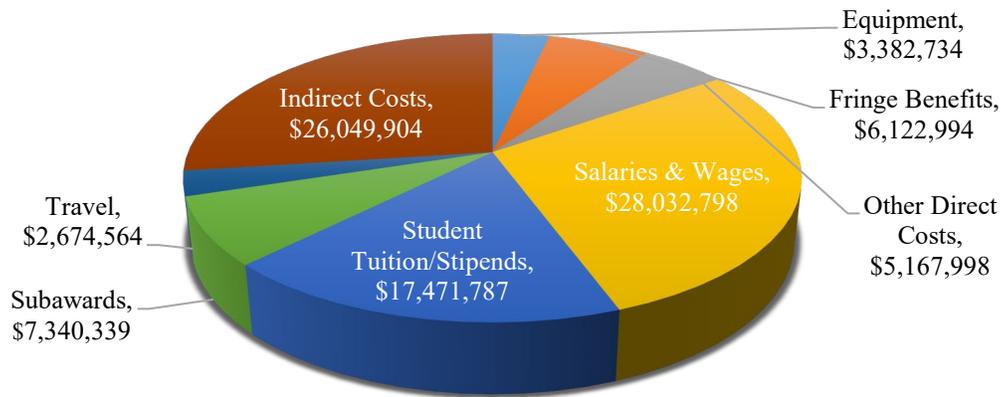
NSF OIG engaged Cotton & Company LLP (referred to as "we") to conduct a performance audit of costs incurred by Yale University (Yale). Yale is a private research university that reported \$587 million in sponsored research funding from Federal sources in 2018.¹ During our audit period of performance (POP) of February 1, 2016, to January 31, 2019, Yale claimed more than \$99 million in expenses on 465 NSF awards through NSF's Award Cash Management Service (ACM\$); however, Yale was unable to identify which expenditures reported in its general ledgers (GLs) represented the \$99 million.² As a result, our audit population included only the \$96 million in expenses that Yale charged to these 465 NSF awards from February 1, 2016, to November 30, 2018.³ Figure 1 shows the \$96 million in costs Yale charged to NSF awards by budget category based on the accounting data that Yale provided.

¹ Yale University Financial Report 2017-2018, Pg. 9, Para. 7.

² Yale was unable to identify which costs recorded in its accounting systems represented the \$99 million it claimed during the POP, but stated that the \$3 million discrepancy between the audit population and the total amount that it drew down in ACM\$ represented expenses incurred prior to January 31, 2016, that Yale drew down on February 8, 2016.

³ Yale performed its final ACM\$ drawdown related to our audit POP on December 21, 2018, for costs billed to NSF awards through November 2018. We therefore did not include Yale's December 2018 or January 2019 GL data in our audit population.

Figure 1. Costs Incurred by Yale by NSF Budget Category, February 1, 2016, through November 30, 2018



Source: Auditor analysis of accounting data provided by Yale University.

This performance audit, conducted under Order No. 140D0418F0439, was designed to meet the objectives identified in the Objectives, Scope, and Methodology (OSM) section of this report (Appendix C) and was conducted in accordance with *Generally Accepted Government Auditing Standards*, issued by the U.S. Government Accountability Office. We communicated the results of our audit and the related findings and recommendations to Yale and NSF OIG. We included Yale’s response to this report in its entirety in Appendix B.

II. AUDIT RESULTS

We tested 250 transactions, which represented \$3,891,359⁴ in costs that Yale charged to NSF awards during the audit period, and performed additional non-transaction-based testing in three areas, as described in the OSM section of this report. Based on the results of our testing, we determined that Yale needs improved oversight of the allocation and documentation of expenses charged to NSF awards to ensure that it is able to support that costs claimed are reasonable, allocable, and allowable in accordance with all Federal and NSF regulations, award terms and conditions, and Yale policies and procedures.

As a result, we identified and questioned \$251,973 of direct and indirect costs that Yale inappropriately claimed during the audit period:

- \$108,144 of expressly unallowable expenses charged to NSF awards.
- \$83,309 of expenses not appropriately allocated to NSF awards.
- \$39,850 of consultant costs not supported by an executed service agreement.
- \$15,252 of internal service provider expenses not appropriately billed.
- \$5,418 of inappropriately applied indirect costs.

⁴ The \$3,891,359 represents the total value of the 250 transactions selected for transaction-based testing; it does not represent the dollar base of the total costs reviewed during the audit.

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

- Accounting system unable to adequately identify expenses related to costs drawn down in ACM\$.
- Incorrect application of indirect cost rates.
- Non-compliance with Yale's internal policies and/or procedures.

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

Finding 1: Unallowable Expenses

Yale charged 17 NSF awards a total of \$108,144 in expenses that were unallowable under Federal regulations, NSF Proposal and Award Policies and Procedures Guides (PAPPGs), and/or Yale's internal policies and procedures, as follows:

Unallowable Use of Participant Support Costs

Yale inappropriately used \$27,677 in funding provided for participant support costs (PSCs) to cover non-participant expenses, including costs incurred for Yale employees,⁵ without first obtaining the NSF Program Officer's approval to do so, as required to re-budget PSC funds per NSF policies.⁶ Specifically:

- From August to December 2017, Yale used \$27,523 of PSC funding awarded under NSF Award No. [REDACTED] to support non-participant and other unallowable expenses, including costs incurred to support employee travel and unnecessary meals.⁷
 - *Yale agreed to reimburse NSF for these expenses.*
- In August 2018, Yale used \$154 of PSC funding awarded under NSF Award No. [REDACTED] to cover lodging expenses incurred for a Yale employee who was not in travel status.⁸

⁵ NSF PAPPG 13-1, Part II, Chapter V, Section B.8.a.(i) and NSF PAPPG 16-1, Part I, Chapter II, Section C.2.g.(v) state that PSCs are direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees that the grantee paid to or on behalf of participants or trainees (but not employees) in connection with meetings, conferences, symposia, or training projects. In addition, 2 Code of Federal Regulations (CFR) §200.75 states that grantees may use PSCs to cover direct costs that the grantee incurred on behalf of participants or trainees (but not employees) in connection with conferences or training projects. (Note that 2 CFR §200.75 only applies to NSF Award No. [REDACTED])

⁶ NSF PAPPG 13-1, Part II, Chapter V, Section B.8.a.(ii) and NSF PAPPG 16-1, Part II, Chapter V, Section A.3.b. state that grantees may not use funds provided for participant support for other categories of expense without the specific written prior approval from the cognizant NSF Program Officer.

⁷ NSF PAPPG 16-1, Part I, Chapter II, Section C.2.g.(xii) states that costs of meals associated with social activities or with intramural meetings of an organization are unallowable.

⁸ NSF PAPPG 13-1, Part II, Chapter V, Section C.5.i. states that travel, meal, and hotel expenses for employees who are not on travel status are unallowable. In addition, 2 CFR 220, Appendix A, Section J.53.a. states that travel costs are expenses for transportation, lodging, subsistence, and related items incurred by employees who are in travel status. Further, Yale Policy 3301, Section 3301.4, *Lodging*, states that travel within 50 miles of a regular work location is not eligible for lodging reimbursement.

- *Yale agreed to reimburse NSF for this expense.*

Unallowable Salary Expenses

Yale charged an NSF award for \$25,082 in summer salary costs that were not allowable under Federal or NSF policies,⁹ as the faculty did not earn the summer compensation in accordance with Yale's effort commitment policy. This policy limits faculty compensated for 9-month appointments to expending no more than 2.5 months of additional effort on sponsored projects during the summer.¹⁰ Specifically:

- In summer 2016, the Principal Investigator (PI) of NSF Award No. [REDACTED] submitted three faculty summer compensation forms, identifying sponsored funding accounts as supporting the first 2 months of effort (June and July) and Yale's "9/9 account"¹¹ as supporting the last month of effort (August). Although the PI obtained appropriate approval for these compensation forms, [REDACTED] did not charge [REDACTED] August 2016 salary to Yale's 9/9 account; instead, [REDACTED] charged it to NSF Award No. [REDACTED]. Although the PI did certify that [REDACTED] August 2016 effort was allocable to this award, the half-month of the PI's August 2016 salary that exceeded the 2.5-month sponsored project limitation, or \$25,082, was not allowable under the NSF award charged because [REDACTED] did not receive provost approval to charge the full 3 months of summer salary to sponsored projects.

Unallowable Airfare Expenses

Yale charged six NSF awards a total of \$19,943 in airfare expenses that were not allowable under Federal, NSF, or Yale policies, which require business-class airfare to be appropriately

⁹ NSF PAPPG 16-1, Part II, Chapter V, Section B.1.a states that compensation paid or accrued by the organization for employees working on an NSF-supported project during the grant period is allowable in accordance with 2 CFR §200.430. According to 2 CFR §200.430, costs of compensation are allowable to the extent that they are reasonable for the services rendered, conform to the established written policy of the non-Federal entity consistently applied to both Federal and non-Federal activities, and follow an appointment made in accordance with a non-Federal entity's written policies.

¹⁰ Yale Policy 1316, *Effort Commitment: Managing Effort Associated with Sponsored Projects*, Section 1316.5 states that faculty with 9-month academic appointments are permitted to allocate up to an additional 2.5 months of summer effort to one or more sponsored projects during the summer research period and earn up to 2.5 months of additional salary for that effort, subject to sponsor policies and the approval of the department chair and dean/provost.

¹¹ Yale's 9-over-9 plan allows faculty to earn up to 3 months of summer salary. Although this employee was no longer participating in Yale's 9-over-9 plan, he proposed using residual research funds he received while he was participating in the program to cover his third month of summer salary. The 9-over-9 plan does allow faculty to exceed the 2.5-month summer salary limitation established within Yale's Effort Commitment policy; however, Yale's *Salary from Grant Funds (9-over-9 Plan)* policy specifically states that, because employees may not charge sponsored projects for more than 2.5 months of a summer salary appointment, the additional one-half month appointment may be charged to the "special research account."

justified,¹² for airfare purchased to comply with the *Fly America Act*,¹³ and for airfare expenses to benefit the NSF awards charged.¹⁴ Specifically:

- In January 2016, Yale charged NSF Award No. [REDACTED] for \$2,578 in airfare costs to attend a grant-related conference; however, the costs did not comply with the *Fly America Act*.
 - *Yale agreed to reimburse NSF for this expense.*
- In January 2016, Yale charged NSF Award No. [REDACTED] for \$1,866 in airfare costs that the PI incurred to attend two grant-related workshops; however, the PI cancelled the original \$1,866 flight and used the travel credit he received to book a series of replacement flights that did not comply with the *Fly America Act*.
 - *Yale agreed to reimburse NSF for this expense.*
- In August 2016, Yale charged NSF Award No. [REDACTED] for \$949 in unallowable airfare expenses that the PI incurred to attend a grant-related conference, including \$631 in unjustified business-class airfare and \$318 for a flight not taken.
 - *Yale agreed to reimburse NSF for these expenses.*
- In May 2018, Yale charged NSF Award No. [REDACTED] for \$2,865 in airfare expenses that the PI incurred to attend a conference that did not benefit the award, as it did not occur until after the award's POP expired.
 - *Yale agreed to reimburse NSF for this expense.*

¹² According to 2 CFR 220, Appendix A, Section J.53.c.(1) and 2 CFR §200.474(e)(1), travelers must use economy-class travel unless they provide a justification to support that their need(s) meet applicable criteria that would allow the traveler to incur airfare costs in excess of the standard commercial airfare. In addition, NSF PPAPGs 16-1 and 18-1, Part I, Chapter II, Section C, 2.g.(iv)(a) states that allowance for air travel normally will not exceed the cost of round-trip economy airfare. Further, Yale Policy 3301, *Travel on University Business*, Section 3301.3, *Air Travel*, states that, if a traveler is allowed to fly business class, the traveler must determine the difference between the cost of business class and economy class and that this difference is not permitted on Federally funded awards except when coach or economy class is not reasonably adequate based on the traveler's medical needs, as documented with a medical justification supplied by a primary care provider prior to confirming the reservation.

¹³ NSF PAPPGs 14-1 and 15-1, Part I, Chapter II, Section C.2.g.(iv)(a) state that persons traveling under NSF grants must travel by U.S. Flag Air carriers, if available. Further, NSF PAPPG 15-1, Part II, Chapter VI, Section F.1.b. specifically states that, in accordance with the *Fly America Act* (49 USC 40118), any air transportation to, from, between, or within a country other than the U.S. of persons or property, the expense of which will be assisted by NSF funding, must be performed by or under a code-sharing arrangement with a U.S. flag air carrier, if such a carrier is available. Further, Yale Policy 3301, Section 3301.1.D. states that travelers on University business funded by a Federal award must comply with the requirements of the *Fly America Act*.

¹⁴ According to 2 CFR 220, Appendix A, Section C.4.a. and 2 CFR §200.405(a), a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to that Federal award or cost objective in accordance with relative benefits received.

- In June 2018, Yale charged NSF Award No. [REDACTED] for \$9,804 in airfare expenses that the PI incurred to purchase unjustified business-class airfare to attend a grant-related conference.
 - *Yale agreed to reimburse NSF for this expense.*
- In June 2018, Yale charged NSF Award No. [REDACTED] for \$1,881 in airfare expenses that the PI incurred to attend a grant-related conference, however, Yale did not acquire or maintain documentation to support that the airfare related to the purchase of allowable economy-class tickets.¹⁵ Further, Yale did not complete proper supporting documentation for an exception to the Fly America Act, as required for the airfare to be allowable per Yale policy.¹⁶
 - *Yale agreed to reimburse NSF for this expense.*

Unallowable Duplicate Expenses

Yale charged four NSF awards a total of \$13,538 in duplicative expenses that were not allowable per Federal regulations.¹⁷ Specifically:

- In August 2016, Yale charged NSF Award No. [REDACTED] for \$81 in relocation expenses that were erroneously duplicated within an individual's travel reimbursement request.
 - *Yale agreed to reimburse NSF for these expenses.*
- Between August 2017 and January 2018, Yale charged NSF Award No. [REDACTED] for \$2,423 in duplicate costs that a subawardee invoiced and did not subsequently credit against future invoices.¹⁸
 - *Yale agreed to reimburse NSF for this expense.*
- In October 2018, Yale charged NSF Award No. [REDACTED] for \$544 in duplicate shipping expenses caused by a vendor erroneously adding shipping costs to the amount of the final invoice when the original purchase order already included the shipping costs.

¹⁵ Yale did not provide documentation to support that it attempted to verify that the traveler purchased economy-class tickets, noting that the traveler used budget airlines.

¹⁶ Yale Policy 3301 PR.01, *Travel Arrangements for University Business*, Section 6, *Air Travel Supported by a Sponsored Award*, states that a traveler **must** provide proper supporting documentation for an exception to the Fly America Act when using a non-U.S. flag carrier, noting that the traveler must complete Form 3301 FR.06, *Documentation for Travel on a Non-U.S. Air Carrier*, along with supporting documentation. Further, the policy states that travelers may not charge airfare to a federally sponsored award without the required documentation.

¹⁷ According to 2 CFR 220, Appendix A, Section C.3 and 2 CFR §200.404, a cost is reasonable if, in its nature and amount, it does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the entity made the decision to incur the cost.

¹⁸ Between October 2017 and November 2018, Yale inadvertently paid the subawardee for \$17,269 in duplicate expenses; however, the subawardee only provided \$14,846 in credits against future invoices.

- *Yale agreed to reimburse NSF for this expense.*
- In May 2018, Yale charged NSF Award No. [REDACTED] for \$10,490 in duplicate costs caused by Yale's financial system erroneously processing a duplicate journal entry that resulted in Yale charging an expense to the NSF award twice.
 - *Yale agreed to reimburse NSF for this expense.*

Unallowable Travel Expenses

Yale charged four NSF awards a total of \$13,770 in per diem and travel insurance expenses that were not allowable under Yale's travel policies. Specifically:

- In October 2017, Yale charged NSF Award No. [REDACTED] for \$9,241 in unallowable per diem expenses, including:
 - \$310 reimbursed to the PI for meals and incidental expense (M&IE) per diem at a rate of \$177 per day, rather than at the approved Department of State foreign per diem rate of \$172 per day for [REDACTED].¹⁹
 - *Yale agreed to reimburse NSF for these expenses.*
 - \$8,931 reimbursed to the PI for M&IE per diem at greater than 50 percent of the published rate on a trip that exceeded 30 days without first obtaining an approved exception request.^{20, 21}
 - *Yale agreed to reimburse NSF for these expenses.*
- In February 2018, Yale charged NSF Award No. [REDACTED] for \$1,210 in unallowable M&IE per diem expenses reimbursed to a traveler for M&IE per diem at a rate greater than 50 percent of the published rate on a trip that exceeded 30 days without first obtaining an approved exception.²²
 - *Yale agreed to reimburse NSF for these expenses.*

¹⁹ Per Yale Policy 3301, *Travel on University Business*, Section 3301.6.B, this employee could claim M&IE per diem using the Department of State foreign per diem rate, which was \$172 for the 37 days in June and July 2017 when the travel was taken.

²⁰ Yale Policy 3301, Section 3301.6.C. states that, without an approved exception, reimbursement of M&IE for business trips that exceed 30 days will be available at 50 percent of the current published Federal M&IE per diem allowance.

²¹ Although the PI did request and receive approval to claim 100 percent per diem during each day of [REDACTED] summer trip, because the PI did not attend several of the conferences and did not visit a number of the countries identified in the approved exception request (instead spending 62 days of the 76-day trip in [REDACTED]), the approved exception request is not appropriate for the actual trip taken.

²² Yale Policy 3301, Section 3301.6.C. states that, without an approved exception, reimbursement of M&IE for business trips that exceed 30 days will be available at 50 percent of the current published Federal M&IE per diem allowance.

- In June 2018, Yale charged NSF Award No. [REDACTED] for \$3,256 in unallowable lodging expenses reimbursed to the PI for lodging per diem using a per diem rate that exceeded the actual daily rate the PI paid for the lodging, as supported by the PI's lodging receipt.²³
 - *Yale agreed to reimburse NSF for these expenses.*
- In August 2016, Yale charged NSF Award No. [REDACTED] for \$63 it reimbursed for trip cancellation insurance.²⁴
 - *Yale agreed to reimburse NSF for this expense.*

Unallowable Other Expenses

Yale charged three NSF awards a total of \$8,134 in other expenses that were not allowable per Federal, NSF, or Yale policies, including unallowable promotional supplies, relocation costs, and publication costs. Specifically:

- In June 2016, Yale charged NSF Award No. [REDACTED] for \$4,246 in costs incurred to purchase unallowable display materials and promotional supplies²⁵ from Yale's Printing & Publishing Services.
 - *Yale agreed to reimburse the \$3,177 of costs incurred for the purchase of the tablecloth, tote bags, pencils, and USB chargers, but did not agree to reimburse the \$1,069 of costs incurred for the purchase of retractable banners.*
- In August 2016, Yale charged NSF Award No. [REDACTED] for \$262 in unallowable relocation costs that an employee claimed after they had relocated to their new place of residence.²⁶
 - *Yale agreed to reimburse NSF for these expenses.*
- In April 2018, Yale charged NSF Award No. [REDACTED] for \$3,626 in costs incurred to publish a paper in the [REDACTED]. The costs were unallowable because the paper did not identify NSF Award No. [REDACTED] as a sponsor.²⁷

²³ Yale Policy 3301, Section 3301.4. states that, without an approved exception, travelers must not use Federal per diem rates for lodging, noting that Yale will only reimburse actual hotel expenses, which must be supported by receipts.

²⁴ Yale Policy 3301, Section 3301.11 states that Yale does not reimburse travelers for trip cancellation insurance.

²⁵ According to 2 CFR 220, Appendix A, Section J.1.f.(3) and 2 CFR §200.421(e)(3) costs of promotional items and memorabilia, including models, gifts, and souvenirs, are unallowable.

²⁶ Yale Policy 3510, *PR.01 Faculty & Staff Relocation Expense Payments & Reimbursements*, states that Yale will reimburse costs for employees to move to a new area of residence.

²⁷ Per 2 CFR §200.461(b)(1), charges for professional journal publications are allowable where the publications report that the work was supported by the Federal government. Further, NSF PAPPG 17-1, Part I, Chapter X, Section E.4.a. states that the grantee is responsible for ensuring that any publication of any material based on or developed under an NSF-funded project includes acknowledgement of NSF support.

- Yale agreed to reimburse NSF for these expenses.

Yale’s processes did not always ensure that it only charged allowable expenses to NSF awards. Specifically, Yale’s processes did not always ensure that:

- Employees did not use PSC funding to support non-participant or other unallowable expenses.
- Employees appropriately allocated summer salary expenses to sponsored projects.
- Employees booked airfare that complied with Federal regulations.
- Yale did not reimburse employees for unallowable travel costs.
- Vendors and employees did not claim duplicate costs.
- Yale did not charge other unallowable costs to sponsored funding sources.

We are therefore questioning \$108,144 of unallowable expenses. Yale concurred with \$81,993 of the questioned costs, but disagreed with \$26,151, as illustrated in Table 1.

Table 1. Unallowable Expenses

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			Yale Agreed to Reimburse
			Direct	Indirect	Total	
August to December 2017 PSCs		2018	\$27,523	\$0	\$27,523	\$27,523
August 2018 PSCs		2019	154	0	154	154
Summer 2016 Salary		2017	14,974	10,108	25,082	0
January 2016 Airfare		2016	1,548	1,030	2,578	2,578
January 2016 Airfare		2016	1,121	745	1,866	1,866
August 2016 Airfare		2017	863	86	949	949
May 2018 Airfare		2018	1,721	1,144	2,865	2,865
June 2018 Airfare		2018	6,669	3,135	9,804	9,804
June 2018 Airfare		2018	1,130	751	1,881	1,881
August 2016 Duplicate		2017	49	32	81	81
August 2017 to January 2018 Duplicates		2018	2,423	0	2,423	2,423
October 2018 Duplicate		2019	544	0	544	544
May 2018 Duplicate		2018	6,300	4,190	10,490	10,490
October 2017 Travel		2018	5,517	3,724	9,241	9,241
February 2018 Travel		2018	960	250	1,210	1,210
June 2018 Travel		2018	1,944	1,312	3,256	3,256
August 2016 Travel		2017	57	6	63	63
June 2016 Materials		2016	2,550	1,696	4,246	3,177
August 2016 Relocation		2017	157	105	262	262
April 2018 Publication		2018	<u>2,165</u>	<u>1,461</u>	<u>3,626</u>	<u>3,626</u>
		Total	<u>\$78,369</u>	<u>\$29,775</u>	<u>\$108,144</u>	<u>\$81,993</u>

Source: Auditor summary of identified instances of questioned costs.

Recommendations

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

1. Resolve the \$26,151 in salary, promotional, and airfare expenses for which Yale has not agreed to reimburse NSF and direct Yale to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Yale to provide documentation supporting that it has repaid or otherwise credited the \$81,993 in questioned participant support costs, salary, duplicate charges, airfare, travel, and other expenses for which it has agreed to reimburse NSF.
3. Direct Yale to strengthen its administrative and management processes and procedures surrounding the use of participant support cost funding. Updated processes could include:
 - a. Performing periodic reviews of all costs accumulated within the general ledger accounts established to track participant support costs to ensure that all costs accumulated within those general ledger accounts relate to allowable costs incurred to support participants.
4. Direct Yale to strengthen its policies and procedures surrounding the approval of summer effort commitments on sponsored projects. Updated policies should provide more specific guidance regarding when employees are permitted to earn more than 2.5 months of summer salary, the approval process for requests to earn more than 2.5 months of summer salary, and the funding source(s) to which employees should charge the additional effort.
5. Direct Yale to strengthen its administrative and management processes and procedures surrounding the approval of expenses to ensure that it does not approve duplicate expenses submitted by subawardees, vendors, and employees.
6. Direct Yale to implement a control that flags potential duplicate payments for additional review.
7. Direct Yale to strengthen its administrative and management processes and procedures surrounding the approval of travel expense reports. Updated processes could include:
 - a. Conducting annual training for individuals responsible for reviewing and approving each department's expense reports. The annual training should address:
 - i. When business-class travel is allowable, the type of documentation required to support allowability, and how to perform and document economy-class airfare comparisons.
 - ii. How to ensure Yale reimburses per diem at the appropriate General Services Administration or Department of State rates, only reimburses lodging based on actual travel costs, and appropriately limits meals & incidental expense per diem claimed on trips that exceed 30 days.
 - iii. Travel expenses that are expressly unallowable per Federal, sponsor, and Yale policies.

- b. Implementing additional controls surrounding its process for flagging airfare purchases not booked through a U.S. flag carrier to ensure that it sufficiently reviews these purchases and that the traveler has appropriately completed Form 3301 FR.06 to support any Fly America Act exceptions.
 - c. Implementing a control to flag any instances in which a traveler charges an award for airfare related to a trip that occurs outside the award's period of performance.
8. Direct Yale to update its travel policies and procedures to include specific guidance regarding how to identify and appropriately account for expenses associated with cancelled or unused airfare. Updated policies and procedures should include detailed steps for tracking and identifying unused or canceled airfare, accounting for travel credits received, and charging unused or canceled airfare expenses to the appropriate funding source(s).
9. Direct Yale to strengthen its administrative processes surrounding the approval of other direct costs charged to Federal awards. Updated processes could include conducting annual training for all relevant department personnel regarding the types of costs that are expressly unallowable under Federal, sponsor, and Yale policies and procedures.
10. Direct Yale to strengthen its administrative processes surrounding the approval of publication costs charged to Federal awards. Updated processes should require Yale's Office of Sponsored Programs to verify that the publication states that the work was supported by the proposed sponsored funding source before Yale can charge the costs to an award.

Yale University Response: Yale disagreed with our conclusions regarding the allowability of \$26,151 in costs questioned on two NSF awards. Specifically:

- With regard to the \$25,082 in questioned summer salary costs charged to NSF Award No. [REDACTED] Yale believes the costs should be allowable because NSF policies permit the payment of summer compensation commensurate with effort devoted to an NSF project. Specifically, Yale stated that, although the absence of internal approval for the additional one-half month of summer salary was not consistent with university policy, the salary costs should still be allowable because the salary "did not represent noncompliance with Federal regulations or NSF award terms and conditions."
- With regard to the \$1,069 in questioned costs for promotional materials charged to NSF Award No. [REDACTED] Yale believes the costs should be allowable because it did not purchase the retractable banners/posters to promote Yale; instead, it used the items to disseminate award-related information. Specifically, Yale stated that it used the banners/posters at various conferences and workshops to inform the attendees of the related consortium activities, which furthered the aims of this NSF award.

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

- With regard to the \$25,082 in questioned summer salary costs charged to NSF Award No. [REDACTED] although the PI's effort certification did support that [REDACTED] spent the additional one-half month of effort on grant-related activities, because Federal policies require salary appointments to be made in accordance with the non-Federal entity's written policies for the appointments to be allowable, the additional salary did not comply with Federal regulations. Accordingly, our position regarding this finding has not changed.
- With regard to the \$1,069 in questioned promotional materials charged to NSF Award No. [REDACTED] because the banners promoted Yale's [REDACTED] ([REDACTED]) rather than the joint NSF/[REDACTED] program that the grant was awarded to support,²⁸ our position regarding this finding has not changed.

Finding 2: Inappropriately Allocated Expenses

Yale did not always allocate expenses to NSF awards based on the relative benefits the awards received, as required by Federal regulations,²⁹ NSF PAPPGs,³⁰ and Yale policies.³¹ Specifically, Yale charged 10 NSF awards a total of \$83,309 in inappropriately allocated expenses, as follows:

Purchases Near Grant Expiration

Yale charged five NSF awards a total of \$67,311 in costs incurred to purchase materials near the awards' expiration dates, when Yale had little to no time to use the purchases to benefit the awards.³² Specifically:

- In August 2017, Yale charged NSF Award No. [REDACTED] for \$20,166 in costs incurred to purchase a laser. The PI reported to have used the laser to perform grant-related experiments; however, because the laser was available for less than 2 months of the

²⁸ NSF Award No. [REDACTED] was awarded to specifically support the establishment of an [REDACTED]

²⁹ According to 2 CFR 220, Appendix A, Section C.4.a. and 2 CFR §200.405(a), a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to that Federal award or cost objective in accordance with the relative benefits received.

³⁰ NSF PAPPGs 13-1, 14-1, 15-1, and 16-1, Part II, Chapter V, Section A, and NSF PAPPGs 17-1 and 18-1, Part II, Chapter X, Section A, state that grantees should ensure that costs claimed under NSF grants are necessary, reasonable, allocable, and allowable under the applicable cost principles, NSF policy, and/or program solicitation.

³¹ Yale Guide 1305 GD.07, *Determining Allowability, Reasonableness and Allocability of Costs for Sponsored Projects*, states that 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 the relative benefits received or other equitable relationship.

³² In addition to these costs appearing to be inappropriately allocated to the awards charged based on the relative benefits received, NSF PAPPGs 13-1 and 14-1 imply, and 16-1, Part II, Chapter V, Section A.2.c. explicitly states, that a grantee should not purchase items of equipment/computing devices or restock materials and supplies in anticipation of grant expiration where there is little or no time left to use such items in the actual conduct of the research.

award's 3-year POP, the PI does not appear to have allocated the cost of this equipment to this award based on the relative benefits received.

- Between March and April 2016, Yale charged NSF Award No. [REDACTED] for \$38,411 in costs incurred to purchase a wavelength tunable laser and controller. The PI reported to have used the equipment to perform grant-related research; however, because the laser was available for less than 3 months of the award's 4-year POP,³³ the PI does not appear to have allocated the cost of this equipment to this award based on the relative benefits received.
- In March 2017, Yale charged NSF Award No. [REDACTED] for \$2,417 in costs incurred to purchase an analytical balance. In response to our audit inquiry, the PI determined that they only used the balance to benefit the award 50 percent of the time. Accordingly, the PI did not appropriately allocate 50 percent of this expense, or \$1,209, to this award.
 - *Yale agreed to reimburse NSF for this expense.*
- In March 2018, after NSF Award No. [REDACTED] expired, Yale charged the award for \$2,086 in materials that did not ship until the final week of the award's POP. Yale stated that the PI had intended to use these materials to benefit this award; however, because the PI did not actually use the materials to perform award-related research,³⁴ these costs are not allocable to this award.
 - *Yale agreed to reimburse NSF for this expense.*
- In September 2018, after NSF Award No. [REDACTED] expired, Yale charged the award for \$5,439 in costs incurred to purchase materials necessary to transfer liquid nitrogen safely into the PI's lab. Although the PI did use liquid nitrogen to perform grant-related research, because the PI did not receive the materials until after the award's POP expired, these costs are not allocable to this award.
 - *Yale agreed to reimburse NSF for this expense.*

Other Inappropriately Allocated Costs

Yale inappropriately allocated \$11,312 in in other direct costs to two NSF awards. Specifically:

- In November 2018, Yale charged NSF Award No. [REDACTED] for \$6,657, or approximately 3 percent, of the costs it incurred to purchase a mass spectrometer. Although the PI stated that they used the equipment to analyze samples for this award, the PI did not

³³ NSF Award No. [REDACTED] became effective on June 15, 2012, and expired on May 31, 2016.

³⁴ Yale stated that the shipping delays prevented the PI from using the materials in performing research under the NSF award.

appropriately document the methodology used to allocate the cost based on the relative benefits received.³⁵ These costs are therefore not allowable.³⁶

- *Yale agreed to reimburse NSF for this expense.*
- In March 2017, Yale charged NSF Award No. [REDACTED] for \$4,655 in costs incurred to purchase a laptop for a post-doctoral employee who did not allocate any effort to this award and whom the PI did not identify as a participant in the award's final report. This expense was therefore not allocable to the award.
 - *Yale agreed to reimburse NSF for this expense.*

Inappropriately Allocated Publication Costs

Yale inappropriately allocated \$2,775 in publication costs to an NSF award. Specifically:

- In June 2016, Yale charged NSF Award No. [REDACTED] for \$4,163 in fees incurred to publish an article in an [REDACTED] publication. In response to our audit inquiries, the PI determined that they should have allocated these fees to three separate funding sources. Accordingly, the PI inappropriately allocated two-thirds of this expense, or \$2,775, to this award.
 - *Yale agreed to reimburse NSF for this expense.*

Inappropriately Allocated Travel Costs

Yale inappropriately allocated \$1,911 in travel costs to two NSF awards. Specifically:

- In April and May 2016, Yale charged NSF Award No. [REDACTED] for \$1,605 in travel expenses that were not allocable to the award because Yale incurred the expenses to enable a graduate student to attend two conferences that did not benefit the award charged.
 - *Yale agreed to reimburse NSF for these expenses.*
- In December 2018, Yale charged NSF Award No. [REDACTED] for \$306 in travel expenses that were not allocable to the award because they represented additional travel costs resulting from personal passport and visa issues.
 - *Yale agreed to reimburse NSF for these expenses.*

³⁵ In response to our audit inquiries, Yale stated that the PI based the amount charged to the award on their knowledge of the cost that other universities or distant Yale facilities incurred to perform the number and types of analyses anticipated under the NSF award.

³⁶ According to 2 CFR §200.405(d), if a cost benefits two or more projects in a proportion that cannot be determined, the organization may allocate the costs to the benefited projects on "any reasonable documented basis."

Yale did not have proper controls in place to ensure that it appropriately and consistently allocated purchases near grant expiration, publication costs, other direct costs, and travel costs to sponsored awards based on the relative benefits that the awards received. We are therefore questioning \$83,309 of inappropriately allocated costs charged to 10 NSF awards. Yale concurred with \$24,732 of the questioned costs but disagreed with \$58,577, as illustrated in Table 2.

Table 2. Inappropriately Allocated Expenses

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs			Yale Agreed to Reimburse
			Direct	Indirect	Total	
August 2017 Equipment		2018	\$20,166	\$0	\$20,166	\$0
March and April 2016 Equipment		2016	38,411	0	38,411	0
March 2017 Materials		2017	726	483	1,209	1,209
March 2018 Materials		2018	1,245	841	2,086	2,086
September 2018 Materials		2019	3,267	2,172	5,439	5,439
November 2018 Equipment		2019	6,657	0	6,657	6,657
March 2017 Other Costs		2017	2,779	1,876	4,655	4,655
June 2016 Publication Costs		2016	1,667	1,108	2,775	2,775
April and May 2016 Travel Costs		2016	964	641	1,605	1,605
December 2018 Travel Costs		2019	184	122	306	306
	Total		<u>\$76,066</u>	<u>\$7,243</u>	<u>\$83,309</u>	<u>\$24,732</u>

Source: Auditor summary of identified instances of questioned costs.

Recommendations

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

1. Resolve the \$58,577 in questioned unallocable equipment costs for which Yale has not agreed to reimburse NSF and direct Yale to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Yale to provide documentation supporting that it has repaid or otherwise credited the \$24,732 of questioned materials, publication, travel, and other direct costs for which it has agreed to reimburse NSF.
3. Direct Yale to strengthen its administrative and management processes and procedures surrounding the approval of equipment and materials charged to an NSF award near the award’s expiration date. Updated processes could include revising Yale’s grant close-out procedures to require that the Office of Sponsored Programs approve all equipment and material purchases charged to a grant within the final 90 days of the grant’s period of performance.

4. Direct Yale to strengthen its administrative and management processes and procedures surrounding the allocation methodology used to charge equipment, materials/supplies, travel, and other direct costs to sponsored awards. Updated processes could include requiring the purchaser or principal investigator to provide a documented justification of the methodology used to allocate the expenses to sponsored funding sources.
5. Direct Yale to strengthen its administrative processes surrounding the approval of publication costs charged to Federal awards. Updated processes could include requiring that the Office of Sponsored Programs approve all publication expenses charged to sponsored funding sources. Specifically, the Office of Sponsored Programs should ensure that the publication identifies the relevant funding source(s) and that the publication expense is appropriately allocated to relevant funding source(s) based on a reasonable, documented methodology before charging the expense to sponsored funding source(s).
6. Direct Yale to strengthen its administrative and management processes and procedures surrounding the approval of travel expense reports. Updated processes could include:
 - a. Performing periodic reviews of all travel expenses charged to NSF awards to ensure that the travel expenses benefited the NSF award(s) charged.
 - b. Conducting annual training for those individuals responsible for approving expense reports. The training should address how to review expense reports for costs that were not directly allocable to the award(s) charged.

Yale University Response: Yale disagreed with our conclusions regarding the allowability of \$58,577 in costs questioned on two NSF awards. Specifically:

- With regard to the \$20,166 in questioned equipment costs charged to NSF Award No. [REDACTED] Yale believes the costs should be allowable because the PI purchased and used the laser to perform research related to this NSF award. Specifically, Yale stated that, although the equipment was only available for 1.5 months of the award's POP, because the PI ordered the equipment approximately 5 months before the award expired and the equipment was specifically calibrated to perform research on this award, the PI could not have allocated the cost of the laser to any other sponsored funding source.
- With regard to the \$38,411 in questioned equipment costs charged to NSF Award No. [REDACTED] Yale believes the costs should be allowable because the laser purchased was necessary to complete the proposed research. Specifically, Yale stated that, although the full set of equipment was only available for 1 month of the award's POP, because the PI ordered the equipment approximately 3 months before the award expired and the equipment was specifically calibrated to perform research on this award, the PI could not have allocated the cost of the laser to any other sponsored funding source.

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

- With regard to the \$20,166 in questioned equipment costs charged to NSF Award No. [REDACTED] because the laser was only available for 2 months, or 5 percent of the award's POP, and because Yale would have used the laser to benefit other projects for the majority of its useful life, our position regarding this finding has not changed.
- With regard to the \$38,411 in questioned equipment costs charged to NSF Award No. [REDACTED] because the laser and controller were only available for 1 month, or 2 percent of the award's POP, and because Yale would have used this equipment to benefit other projects for the majority of its useful life, our position regarding this finding has not changed.

Finding 3: Professional Services Agreement Not Appropriately Executed

Yale charged one NSF award for \$39,850 in vendor costs that were not supported by an appropriately executed Professional Services and Consulting Agreement (PSCA), as required for vendors who provide more than \$10,000 in services, per Yale's procurement policy.³⁷ Specifically:

- In February 2018, Yale charged NSF Award No. [REDACTED] for \$39,850 in fees paid to a software licensor to obtain 3 years of software support services. The software supported by these services does appear to be allocable to this award, although Yale noted that it received the software free-of-charge; however, Yale did not execute a PSCA with the vendor that included a description of the services, an estimate of the amount of time required to perform the services, the rate of compensation, and the termination provisions for the agreement.³⁸
 - Yale stated that it removed the questioned costs from the award and retroactively performed the required procurement activities, which included completing a sole-source justification and issuing a PSCA. Yale intends to incrementally re-charge these expenses to the NSF award.

Yale did not have proper controls in place to ensure that it appropriately completed PSCAs before hiring or paying vendors to perform services with a value exceeding \$10,000. We are therefore questioning \$39,850 in services that were not supported by a PSCA, as illustrated in Table 3.

³⁷ According to Yale Policy 3210, *Professional Services and Consulting*, Section 3210.2, *Initiating and Processing Professional Services and Consulting Agreements (PSCA)*, Yale must create PSCAs for all consulting agreements that involve total aggregate payments in excess of \$10,000.

³⁸ According to 2 CFR §200.459(b)(8), entities should consider the adequacy of the contractual agreement for the service (e.g., description of the service, estimate of time required, rate of compensation, and termination provisions) when determining the allowability of professional service costs.

Table 3. Professional Services Agreement Not Appropriately Executed

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs		
			Direct	Indirect	Total
February 2018 Services	██████	2018	\$23,791	\$16,059	\$39,850
	Total		\$23,791	\$16,059	\$39,850

Source: Auditor summary of identified instances of questioned costs.

Recommendations

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

1. Resolve the \$39,850 in questioned professional services agreement costs for which Yale has not agreed to reimburse NSF and direct Yale to repay or otherwise remove the sustained questioned costs from its NSF award.
2. Review Yale’s re-charging of the questioned cost amounts for compliance with Federal, NSF, and Yale regulations and policies.³⁹
3. Direct Yale to strengthen its administrative and management controls and processes surrounding the execution of professional services and consulting agreements. Updated processes could include:
 - a. Providing annual training to principal investigators and other departmental personnel responsible for approving vendor costs. This training should emphasize:
 - i. The requirement that Yale complete professional services and consulting agreements with vendors before the vendors begin providing services.
 - ii. The type of information that should be included in the professional services and consulting agreement, including the total amount due to the consultant and when and how the vendor should invoice Yale for the services provided.
 - b. Implementing a control to flag each vendor that has invoiced more than \$10,000 in services to a single funding source if Yale has not executed a professional services and consulting agreement with that vendor.

Yale University Response: Yale disagreed with the \$39,850 in questioned costs identified for this finding. Specifically, Yale stated that, although the costs were not initially supported by an agreement, because the software was necessary and benefited the NSF award and because Yale issued a PSCA to this vendor as a result of the audit, this finding should be characterized as a compliance issue rather than as a questioned cost.

³⁹ Because Yale re-charged these costs to the award after the audit’s POP had expired, the audit team did not review the re-charged costs.

Auditors' Additional Comments: Our position regarding this finding has not changed. Specifically, because the PSCA was not in place at the time Yale incurred the sampled expense, our conclusion regarding this finding has not changed.

Finding 4: Internal Service Provider Rates Not Appropriately Billed

Yale Internal Service Providers (ISPs)⁴⁰ did not always bill NSF awards using rates that were appropriately developed,⁴¹ reviewed on an annual basis,⁴² sufficiently supported,⁴³ or for services that were directly allocable to the awards charged.⁴⁴ As a result, Yale inappropriately billed ISP services to 104 NSF awards, including charging \$15,252 in unallowable costs to 11 of these awards. Specifically:

Invoices Not Based on Formal Rate Schedules

Yale's Information Technology Services (ITS), a specialized service facility (SSF), charged eight NSF awards a total of \$12,855 in service fees that ITS did not base on formal rate schedules. Specifically:

- ITS charged five NSF awards for \$9,477⁴⁵ in costs incurred for "Storage@Yale" services. ITS invoiced these services using a "Storage @ Yale Rate Worksheet" that included rates developed based on the estimated costs to provide the services. However, Yale did not appropriately review this rate worksheet biennially to confirm that it complied with Federal policies, as the rate worksheet was not stored within Yale's central repository for SSF rate schedules.

⁴⁰ Yale Policy 1410, *Internal Service Providers*, states that an ISP is a unit that regularly provides goods and/or services to other University Organizational Units or Departments and charges for those goods or services. The policy specifically notes that ISPs include specialized service facilities (SSFs), recharge centers, and cost allocation units.

⁴¹ According to 2 CFR 220, Appendix A, Section J.47(b) and 2 CFR §200.468(b), entities must charge any material SSF costs directly to the applicable awards based on the actual usage of the services and using a schedule of rates or established methodology that does not discriminate between activities funded under Federal awards and other activities of the non-Federal entity, including usage by the non-Federal entity for internal purposes, and that is designed to recover only the aggregate costs of the services. The rates must be adjusted at least biennially and must take into consideration over/under-applied costs for the previous period(s).

⁴² Yale Policy 1410.4 states that ISPs must annually develop a schedule of rates and charges for all users of the ISP's goods and services. These rates must comply with Federal regulations. The ISPs must annually submit the rates to a designated central office, which will periodically review a sample of the rates to "confirm compliance with the policy so that all rates are reviewed cyclically."

⁴³ According to 2 CFR §215.21(b)(7), recipients' financial management systems shall provide cost accounting records that are supported by source documentation.

⁴⁴ According to 2 CFR 220, Appendix A, Section C.4.a and 2 CFR §200.405(a), a cost is allocable to a particular cost objective (e.g., a specific function, project, sponsored agreement, department) if the goods or services involved are chargeable or assignable to such cost objective in accordance with relative benefits received or other equitable relationship.

⁴⁵ ITS charged Storage@Yale services to five NSF awards as follows: \$979.80 to NSF Award No. [REDACTED] \$1,998.82 to NSF Award No. [REDACTED] \$2,854.08 to NSF Award No. [REDACTED] \$318.70 to NSF Award No. [REDACTED] and \$3,325.48 to NSF Award No. [REDACTED]

- ITS charged four NSF awards for \$1,388⁴⁶ in costs incurred for services for which ITS did not produce a rate schedule for before the audit.
- ITS charged three NSF awards for \$1,990⁴⁷ in costs incurred for “Research Storage” services using a rate that ITS established based on a quote for similar services that Yale received from a vendor in 2011,⁴⁸ rather than on a formal SSF rate schedule.

ISP Rate Sheets Contained Errors

A total of 17 Yale ISPs billed 88 NSF awards using ISP rate sheets that contained typographical errors and, as a result, overcharged NSF awards for \$2,173 in service expenses. Specifically:

- During FYs 2016 and 2017, Yale’s Cell Imaging Core Facility ISP (ISP 288) overbilled NSF Award Nos. [REDACTED] and [REDACTED] by \$1,761 and \$412, respectively, as a result of typographical errors included within the ISP’s rate sheet.
 - *Yale agreed to reimburse NSF for this expense.*

Yale charged 86 other NSF awards for expenses that 16 Yale ISPs invoiced using rate sheets that contained typographical errors. Because Yale corrected these typographical errors and the errors did not result in overcharges, we are not questioning any costs associated with these exceptions.

ISP Charges Inappropriately Billed as Direct Costs to NSF Awards

One Yale ISP charged an NSF award for \$165 in costs that were not directly allocable to the award charged. Specifically:

- During FYs 2016 and 2017, Yale charged NSF Award No. [REDACTED] for \$165 of indirect cost services invoiced by Yale’s Facilities-Custodial Services ISP (FAMIS3).
 - *Yale agreed to reimburse NSF for this expense.*

Incorrect ISP Rate Used

One Yale ISP billed an NSF award for \$59 of unallowable costs because the ISP used a rate that exceeded the rate supported by its rate sheet. Specifically:

- During FY 2017, Yale’s Analytical and Stable Isotope Center ISP (ISP 026) overbilled NSF Award No. [REDACTED] by \$59 because it used a billing rate that was higher than the rate identified in its rate sheet.

⁴⁶ ITS charged these other services to four NSF awards as follows: \$166.48 to NSF Award No. [REDACTED], \$938.00 to NSF Award No. [REDACTED], \$132.30 to NSF Award No. [REDACTED] and \$151.19 to NSF Award No. [REDACTED].

⁴⁷ ITS charged research storage services to three NSF awards as follows: \$64.04 to NSF Award No. [REDACTED], \$814.67 to NSF Award No. [REDACTED] and \$1,111.25 to NSF Award No. [REDACTED].

⁴⁸ ITS billed Yale for “Research Storage” services at a rate it had obtained from a vendor providing a similar service.

- *Yale agreed to reimburse NSF for this expense.*

Sponsored Project Internal Service Center Rate Higher Than Non-Sponsored Project Rate

One Yale ISP rate sheet indicated that its sponsored award rate was higher than its non-sponsored award rate for the same services. Specifically:

- In FY 2016, Yale’s Center for Genome Analysis ISP (ISP 904) developed and billed costs using a “Sponsored Award Rate” that was higher than the “Non-sponsored Rate” included on its rate sheet for the services in question.
 - Because Yale stated that the lower “Non-sponsored Rate” had been erroneously included on the rate sheet and was able to provide documentation supporting that the “Sponsored Award Rate” charged to this award was the only rate the ISP used to bill its ISP customers, we are not questioning any costs associated with this exception.

Insufficiently Detailed ISP Invoices

A total of 6 Yale ISPs (CINSTR, ISP011, ISP043, ISP058, ISP455, and YRISPS) billed 74 NSF awards using invoices that did not contain sufficient detail to support that the ISP had appropriately billed the services in accordance with its rate sheet. Specifically:

- Yale charged 74 NSF awards for services that 6 Yale ISPs had billed using invoices that did not contain sufficient detail to support the number of units billed and/or the rate(s) used to calculate the total amounts invoiced. Because we were able to obtain sufficient additional documentation to verify that the amounts invoiced were appropriate,⁴⁹ we are not questioning any costs associated with these exceptions.

Billed Rates Not Sufficiently Supported

A total of 3 Yale ISPs billed 19 NSF awards for services using rates that differed from those included in the ISPs’ formal rate sheets. Specifically:

- Yale charged 19 NSF awards for services that 3 Yale ISPs had billed using rates that differed from those included in their rate sheets. Because the billed rates were lower than the approved rates identified in the ISP rate sheets, we are not questioning any costs associated with these exceptions.

Yale did not have sufficient policies and procedures in place to validate that its ISPs appropriately developed and billed SSF rates. Specifically, Yale did not ensure that its ISPs accurately prepared rate sheets or appropriately billed NSF awards using the rates identified in the rate sheets. As a result, we are questioning \$15,252 in inappropriately billed ISP expenses. We also noted four compliance findings for areas in which Yale should improve its ISP policies

⁴⁹ We reviewed handwritten notes on sampled ISP invoices and internal ISP tracking documents to obtain sufficient evidence to support the amounts invoiced by the ISPs.

and procedures. Yale concurred with \$2,397 of the questioned costs but disagreed with \$12,855, as illustrated in Table 4.

Table 4. Internal Service Provider Rates Not Appropriately Billed

Description	ISP(s)	NSF Award No.	Questioned Costs			Yale Agreed to Reimburse
			Direct	Indirect	Total	
Invoices Not Based on Formal Rate Schedules	YTMSIT YTMSDC	[REDACTED]	\$100	\$66	\$166	\$0
			38	26	64	0
			1,078	717	1,795	0
			1,586	413	1,999	0
			2,381	1,584	3,965	0
			560	378	938	0
			307	144	451	0
ISP Rate Sheets Contained Errors	ISP288 ISP288 See Appendix D	[REDACTED]	2,076	1,401	3,477	0
			1,058	703	1,761	1,761
			247	165	412	412
ISP Charges Inappropriately Billed as Direct Costs	FAMIS3	[REDACTED]	165	0	165	165
Incorrect ISP Rate Used	ISP026	[REDACTED]	35	24	59	59
Sponsored Project Rate Higher Than Non-Sponsored Rate	See Appendix D		0	0	0	0
Insufficiently Detailed ISP Invoices	See Appendix D		0	0	0	0
Billed Rates Not Sufficiently Supported	See Appendix D		0	0	0	0
	Total		<u>\$9,631</u>	<u>\$5,621</u>	<u>\$15,252</u>	<u>\$2,397</u>

Source: Auditor summary of identified instances of questioned costs.

Recommendations

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

1. Resolve the \$12,855 in questioned internal service provider expenses for which Yale has not agreed to reimburse NSF and direct Yale to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct Yale to provide documentation supporting that it has repaid or otherwise credited the \$2,397 in inappropriately billed internal service provider expenses for which it has agreed to reimburse NSF.
3. Direct Yale to strengthen its administrative and management processes and procedures surrounding internal service provider billings. Updated processes could include performing periodic reviews of internal service provider expenses charged to sponsored awards to ensure that:
 - a. Internal service providers bill rates in accordance with their rate sheets.

- b. The types of expenses that Yale directly bills to sponsored awards represent allowable direct costs.
4. Direct Yale to strengthen its administrative and management processes and procedures surrounding the development of internal service provider rate sheets. Updated processes could include requiring individuals who are independent from the internal service provider rate-setting process to perform periodic quality control reviews of all internal service provider rate sheets to ensure that:
 - a. The internal service provider rate sheets are free from errors.
 - b. The established rate(s) do not discriminate against federally sponsored activities.
5. Direct Yale to update its invoicing process for the CINSTR, ISP011, ISP043, ISP058, ISP455, and YRISPS internal service providers to require that invoices identify the number of unit(s) or hour(s) billed, as well as the rate(s) used to calculate the invoiced amounts.

Yale University Response: Yale disagreed with the \$12,855 in ITS costs questioned on eight NSF awards. Specifically:

- With regard to the \$9,477 in questioned “Storage@Yale” costs, Yale believes the costs should be allowable because the rate developed in April 2016 did not need to be adjusted until FY 2018 and because, in response to our audit inquiries, Yale produced a rate schedule that demonstrated that the initial rate used did not need to be adjusted in subsequent years.
- With regard to the \$1,388 in other questioned ITS services, Yale acknowledged that the costs were not supported by existing calculated rates but stated that the costs should be allowable because Yale retroactively produced a rate schedule demonstrating that the rates used were appropriate.
- With regard to the \$1,990 in questioned research storage costs, Yale acknowledged that it did not submit annual rates for the storage service but stated that the costs should be allowable because “the rates devolved for services chargeable to Federal awards continued to be lower than actual costs of the service.”

Yale further noted that, unrelated to this audit, it has revised its policies and procedures related to the creation, charging, and monitoring of ISPs over the past year and a half. Specifically, Yale stated that the changes it has made address many of the recommended administrative and managerial process changes and comply with Federal regulations.

Auditors’ Additional Comments: Our position regarding this finding has not changed. Specifically, although Yale stated that the ITS costs should be allowable because the retroactive rate analyses that it performed demonstrated that the rates applied were appropriate, Yale did not

verify that the rates applied by the ITS service center were appropriately calculated in compliance with Federal regulations until after the audit’s POP expired. Therefore, we did not audit the allowability of the rates developed in response to our audit and our position regarding this finding has not changed.

Finding 5: Indirect Costs Not Appropriately Applied

Yale inappropriately applied \$5,418 in indirect costs to capital expenditures that Yale should not have accounted for as Modified Total Direct Costs (MTDCs) to which Yale may apply its indirect cost rates, per Federal guidance⁵⁰ and Yale’s Negotiated Indirect Cost Rate Agreement (NICRA).⁵¹ Specifically:

- In October 2016, Yale charged NSF Award No. [REDACTED] for \$5,418 in indirect costs assessed on direct costs related to capital expenditures incurred to install materials needed to provide water, electricity, and heat to an outdoor green wall.
 - *Yale agreed to reimburse NSF for this expense.*

Yale did not have sufficient oversight in place to ensure that it appropriately excluded rearrangement and alteration costs from MTDC accounts that assess indirect costs. We are therefore questioning \$5,418 of inappropriately applied indirect costs. Yale agreed to reimburse these costs, as illustrated in Table 5.

Table 5. Indirect Costs Inappropriately Applied

Description	NSF Award No.	Fiscal Year(s)	Questioned Costs	Yale Agreed to Reimburse
October 2016 Capital Expenditures	[REDACTED]	2017	\$5,418	\$5,418
	Total		\$5,418	\$5,418

Source: Auditor summary of identified instances of questioned costs.

Recommendations

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

1. Direct Yale to provide documentation supporting that it has repaid or otherwise credited the \$5,418 of questioned indirect costs for which it has agreed to reimburse NSF.
2. Direct Yale to strengthen its oversight procedures surrounding the charging of, or transferring of, expenses related to rearrangement, alteration, and other capital expenditures.

⁵⁰ According to 2 CFR §200.68, MTDC excludes capital expenditures.

⁵¹ Yale’s NICRA dated March 14, 2014, states that MTDC excludes capital expenditures.

3. Direct Yale to perform periodic reviews of expenditures charged to its facilities accounts to ensure that it does not inappropriately charge rearrangement and alteration costs to accounts that accumulate modified total direct costs to which Yale applies its indirect cost rates.

Yale University Response: Yale agreed with the questioned costs for this finding. Specifically, Yale stated that the department transferred the costs to the NSF award using an incorrect indirect-cost-bearing expenditure type, which caused it to inadvertently charge indirect costs to the award. However, Yale did note that that it disagrees with the recommendation that it be required to perform periodic reviews of expenditures charged to its facilities accounts, as Yale believes this recommendation does not reflect the circumstances that led to the inadvertent application of indirect costs.

Auditors' Additional Response: Our position regarding this finding has not changed. Specifically, because a periodic review of the costs charged to facilities accounts could help ensure that departments do not inappropriately charge rearrangement and alteration costs to an indirect-cost-bearing expenditure type, our recommendations for this finding have not changed.

Finding 6: Accounting System Unable to Adequately Identify Expenses Related to Costs Drawn Down in ACM\$

Yale was not always able to identify which expenses recorded within its financial management systems⁵² represented the funding that it drew down from NSF's ACM\$ system during the audit period, as required by Federal regulations.⁵³ Yale noted that the expense amounts recorded within its GLs would not reconcile to the amounts it drew down in ACM\$ because, prior to November 2017, it did not calculate the total amount of cash to draw down in AMC\$ each month based solely on its financial management system records. Specifically:

- **Oracle:** Prior to July 1, 2017, Yale calculated the total amount to draw down each month by (1) identifying the total NSF award expenditures recorded in the GL; (2) subtracting the total of any cash previously received, any over-expenditures, and any at-risk expenditures from the Step 1 total; and (3) reducing the Step 2 total by 10 percent to account for any unsettled expenses. Yale stated that this process caused the amounts recorded within its GL to be higher than the amounts it drew down in ACM\$ each month.
- **Workday:** Prior to November 2017, Yale's Workday system did not automatically generate invoices to support the monthly cash drawdown process.

Because Yale was able to provide reconciliations for the 16 sampled NSF awards to support that its ACM\$ drawdown procedures did not cause it to claim costs before it incurred the related expenses and because the cash that Yale drew down as a result of these procedures was based on actual cash needs, we are not questioning any costs associated with this exception. However, we are noting a compliance finding, as Yale's financial management systems did not always

⁵² In July 2017, Yale converted its accounting system from Oracle to Workday.

⁵³ According to 2 CFR 215.21 and 2 CFR 200.302(b), the financial management system of each non-Federal entity must provide records that adequately identify the source and application of funds for federally funded activities.

adequately identify the source and application of the funds that Yale claimed from NSF during the audit period.

Recommendations

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

1. Direct Yale personnel who are independent from the monthly NSF cash drawdown process to perform periodic Award Cash Management Service reconciliations to ensure that Yale is able to identify which expenditures it claimed within each Award Cash Management Service drawdown request.

Yale University Response: Yale disagreed with this finding because the cause of the “presumed issue cited no longer exists.” Specifically, Yale stated that the finding should be withdrawn because (1) it was able to demonstrate that the methodology it used to draw down funding in its Oracle system did not cause it to claim excess cash; (2) there is no requirement for Yale to draw cash equal to settled expenses; and (3) the issue related only to Yale's legacy Oracle system and the first few months of Workday. Yale further stated that the recommendation for this finding is moot, as Workday's invoice billing process obviates the need for the recommendation.

Auditors' Additional Comments: Our position regarding this finding has not changed. Specifically, because Yale stated that it was unable to identify the source and application of the funds it drew down from ACM\$ during the audit period, which required us to use a modified audit population, our conclusion regarding this finding has not changed.

Finding 7: Incorrect Application of Indirect Cost Rates

Yale inappropriately applied a 66.5 percent indirect cost rate to all direct costs charged to at least 16 grants awarded between July 1, 2014, and September 18, 2015.⁵⁴ Although the 66.5 percent rate was appropriate for costs incurred on these awards from July 1, 2014, to June 30, 2016,⁵⁵ Yale should have applied an indirect cost rate of 67.5 percent⁵⁶ to all direct costs charged to these awards on or after July 1, 2016.

Yale believes that its use of the 66.5 percent indirect cost rate throughout the life of these awards was consistent with Federal regulations, which require the use of the negotiated rates in effect at the time of the initial award throughout the life of the award,⁵⁷ because this rate was the provisional rate applicable at the time the grants were originally awarded and was then identified as the final rate for the effective period of July 1, 2014, to June 30, 2015, in Yale's NICRA dated

⁵⁴ Yale received at least 16 NSF awards between July 1, 2014, the beginning of the provisional rate period included within Yale's NICRA dated March 14, 2014, and September 18, 2015, when Yale's NICRA was next amended.

⁵⁵ Yale's NICRA dated September 18, 2015, established a final indirect cost rate of 66.5 percent for the period from July 1, 2014, through June 30, 2015, and a predetermined indirect cost rate of 66.5 percent for the period from July 1, 2015, through June 30, 2016.

⁵⁶ Yale's NICRA dated September 18, 2015, established a predetermined indirect cost rate of 67.5 percent for all costs incurred between July 1, 2016, and June 30, 2018.

⁵⁷ According to 2 CFR 220, Appendix A, Section G.7.a and 2 CFR 200, Appendix III, Section C.7, Federal agencies must use the negotiated rates in effect at the time of the initial award throughout the life of the Federal award.

September 18, 2015. However, because provisional rates are not negotiated rates,⁵⁸ the rates Yale was required to apply throughout the life of these NSF awards were the negotiated rates included within its September 2015 NICRA, which included a predetermined rate of 67.5 percent for costs incurred after July 1, 2016.

Because the 66.5 percent rate Yale applied was lower than the appropriate 67.5 percent rate, this exception did not result in any questioned costs; however, we are noting a compliance exception, as illustrated in Table 6, as Yale should have used all of the negotiated rates established within its September 2015 NICRA.

Table 6. Incorrect Application of Indirect Cost Rates

NSF Award No.	Award Date	Appropriate Rate	Rate Applied
	7/16/2014	67.50%	66.50%
	7/19/2014	67.50%	66.50%
	7/29/2014	67.50%	66.50%
	7/31/2014	67.50%	66.50%
	9/9/2014	67.50%	66.50%
	2/3/2015	67.50%	66.50%
	3/17/2015	67.50%	66.50%
	4/13/2015	67.50%	66.50%
	4/16/2015	67.50%	66.50%
	4/21/2015	67.50%	66.50%
	5/11/2015	67.50%	66.50%
	5/11/2015	67.50%	66.50%
	6/26/2015	67.50%	66.50%
	7/10/2015	67.50%	66.50%
	8/20/2015	67.50%	66.50%
	8/21/2015	67.50%	66.50%

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

Recommendations

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

1. Direct Yale to update its current practices for establishing indirect cost rates to apply to sponsored projects awarded during provisional rate periods. The updated practices should require Yale to use all fixed rates identified in the negotiated indirect cost rate agreements that establish the final rates for the provisional period within which the sponsored project was awarded.

Yale University Response: Yale disagreed with this finding, stating that it applied a provisional rate to awards made during the provisional rate period and then applied the final rate developed

⁵⁸2 CFR 220, Appendix A, Section G.7 and 2 CFR 200, Appendix III, Section C.6 state that provisional rates may be replaced by fixed or predetermined rates at any time during the year and that, if they are not replaced before the end of the year, a final rate will be established and upward or downward adjustments will be made based on the actual allowable costs incurred for the period. Further, 2 CFR 200, Appendix III, Section C.7 specifically states that “Negotiated rates” include final, fixed, and predetermined rates and exclude provisional rates.

for the provisional period throughout the life of the award, in compliance with Federal and NSF regulations. Specifically, Yale stated that because the “final” rate established for the provisional period was the same as the rate established for the provisional period, Yale was not required to make any adjustments to the rate it applied to the awards made in the first year of the NICRA.

Auditors’ Additional Response: Our position regarding this finding has not changed. Specifically, although we agree that Yale was not required to retroactively adjust the indirect costs that it applied to these awards before receiving the September 2015 NICRA with the “final” rate for the provisional award period, because the NICRA that included the “final” rate included multiple negotiated rates, to comply with Federal regulations, Yale should have applied indirect costs to future expenses incurred on these awards using all of the negotiated rates included in the NICRA, as explained in the finding above. Accordingly, our conclusion regarding this finding has not changed.

Finding 8: Non-Compliance with Yale Policies

Yale did not always comply with, or did not always document compliance with, its internal travel, effort reporting, salary, subaward, or procurement policies and procedures when incurring costs charged to NSF awards. Because these instances of non-compliance did not directly result in Yale charging unallowable costs to NSF awards, we are only noting compliance exceptions for these instances.

Non-Compliance with Yale Travel Policy

We identified one instance in which Yale did not comply with its internal travel policy, which requires travelers to document and pay the incremental costs associated with combining business and personal travel. Specifically:

- Yale did not provide documentation to support that a traveler paid the incremental costs associated with personal travel,⁵⁹ as it did not perform a comparison to ensure that the \$1,744 in airfare expenses it charged to NSF Award No. [REDACTED] in May 2017 was the same, or less than, the expenses it would have incurred if the traveler had not designed their itinerary to accommodate personal business.

Non-Compliance with Yale Effort Policy

We identified two instances in which Yale did not comply with its internal effort reporting policies regarding the preparation of manual effort reports, which require faculty to certify effort expended on sponsored projects during the summer effort reporting period.⁶⁰ Specifically, we identified two instances in which employees who charged summer salary to NSF Award Nos.

⁵⁹ Yale Policy 3301, Section 3301.2, *Making Travel Reservations*, states that if a traveler designs their itinerary to accommodate personal business, the traveler must pay the incremental cost of any personal business and document the costs incurred, separating personal expenses from Yale business expenses. Travelers must charge personal expenses separately when making arrangements.

⁶⁰ Yale Policy 1315, *Effort Reporting: Certifying Effort on Sponsored Projects*, states that faculty who receive summer salary from sponsored projects must certify as to the effort expended on those projects during the summer effort period.

██████ and ██████ did not appropriately complete, certify, and submit their June 2016 and June 2017 effort reports, respectively, because Yale did not generate those effort reports until November 2019, in response to the audit. Although Yale’s records⁶¹ did not appropriately support the salary costs prior to our audit, because the employees certified this effort as allocable to the NSF awards charged in November and December 2019, respectively, we are not questioning any costs associated with this exception.

Non-Compliance with Yale Salary Policy

We identified one instance in which Yale did not use the appropriate salary and fringe benefit rates when charging an NSF award for salary and fringe costs associated with a temporary employee. Specifically:

- Yale charged NSF Award No. ██████ for \$2,968 in salary and fringe benefit costs related to salary expenses that a temporary hourly employee earned for time spent performing grant-related research in June 2018. The PI appropriately certified the employee’s effort as allocable to this award; however, Yale did not charge the salary costs in accordance with its salary policies, as Yale calculated the salary paid to the employee using an hourly rate that was lower than the rate included in the employee’s offer letter.⁶² Further, Yale applied fringe benefits to a portion of those salary costs using a fringe benefit rate that was lower than the part-time fringe benefit rate approved in the relevant Yale NICRA.⁶³

Non-Compliance with Yale Subaward Policy

We identified two instances in which Yale did not comply with its internal subaward policies, which require it to pay subaward invoices within 30 days of receipt,⁶⁴ as illustrated in Table 7.

Table 7. Non-Compliance with Yale Subaward Policy

NSF Award No.	Invoice Receipt Date	Payment Date	Days Between Invoice Date and Payment
██████	April 27, 2018	July 18, 2018	82
██████	November 10, 2017	January 1, 2018	52

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

⁶¹ According to 2 CFR §200.430(i)(1), charges to Federal awards for salaries and wages must be based on records that accurately reflect the work performed and that are supported by a system of internal control that provides reasonable assurance that the charges are accurate, allowable, and properly allocated.

⁶² Yale Policy 3501, *Payroll*, Section 3501.2, *Off-Cycle Payments-Underpayments*, states that, to comply with Connecticut law, Yale must pay hourly employees all pay owed them within 8 days after the end of the pay period.

⁶³ Yale’s NICRA dated April 9, 2018, states that Yale should have applied fringe benefits for part-time employees at a rate of 7.60 percent during the period from July 1, 2017, to June 30, 2018; however, Yale applied a fringe benefit rate of 7.10 percent to this individual’s salary.

⁶⁴ Yale Policy 1307, *PR.02 Managing Subrecipient Activity Associated with Sponsored Programs Processing Subrecipient Invoices*, states that 2 CFR Part 200 requires Yale to pay subrecipient invoices issued under a Federal prime award within 30 calendar days after receipt of the invoice, unless the invoice is believed to be improper.

Non-Compliance with Yale Procurement Policies

We identified five instances in which Yale did not comply with its internal procurement policies, which require Yale to verify that suppliers are not suspended or debarred⁶⁵ and to appropriately complete PSCAs or purchase requisitions when procuring consulting services.⁶⁶ Specifically:

- In April 2016, Yale charged NSF Award No. [REDACTED] for \$8,325 in consultant costs that appeared to be reasonable and necessary for the completion of the award; however, the services were not supported by a purchase requisition.
- In September 2016, Yale charged NSF Award No. [REDACTED] for \$17,989 in costs incurred for a vendor to design and implement a software application under a PSCA that did not identify how the vendor would invoice Yale for the services provided.
 - Because the billed rates appear to be reasonable and consistent with the award budget and the scope of work outlined in the award proposal, we are not questioning any costs associated with this exception.
- In July 2017, Yale charged NSF Award No. [REDACTED] for \$84,315 in materials costs that Yale paid before verifying that the vendor was not suspended or debarred from receiving Federal funding.
- Between May and July 2018, Yale charged NSF Award No. [REDACTED] for \$15,000 in check-request payments made to the Entrepreneurial Lead (EL) of this award that were not supported by a PSCA that outlined the scope of the EL's responsibilities and the cost of the services to be provided.
 - Because the PI signed and approved the departmental check requests provided to the EL and because the payments were consistent with the approved grant budget, we are not questioning costs associated with this exception.
- In July 2018, Yale charged NSF Award No. [REDACTED] for \$18,292 in costs incurred to obtain software development, front-end production, reporting, support, and training services under a PSCA that did not include an agreed-upon payment amount for the services to be rendered.
 - Because the total paid was supported by a purchase order and the rates billed appear to be reasonable and consistent with the award budget and the scope of

⁶⁵ Yale Policy 3201, *General Purchasing*, Section 3201.3, *Competition and Supplier Selection, Suspended or Debarred Suppliers*, states that Yale shall not enter into a procurement contract in excess of \$35,000 with a supplier that is debarred, suspended, or proposed for debarment by any Federal executive agency, unless there is a compelling reason to do so.

⁶⁶ Yale Policy 3210, Section 3210.2, *Initiating and Processing Professional Services and Consulting Agreements (PSCA)*, states that all engagements of independent contractors, regardless of the amount of compensation, should be entered as requisitions, and that PSCAs must be used for agreements that involve total aggregate payments in excess of \$10,000.

work outlined in the award proposal, we are not questioning any costs associated with this exception.

Yale did not have adequate procedures in place to ensure that it consistently followed, and documented its compliance with, its internal policies and procedures. Specifically:

- Yale’s expense report approval process did not always ensure that travel costs charged to sponsored projects did not increase as a result of a traveler combining business and personal travel.
- Yale’s effort certification process did not always ensure that personnel appropriately completed effort reports when processing payroll adjustments after the end of an effort reporting period.
- Yale’s procedures for establishing temporary appointments did not always ensure that it established appointments using the hourly rates identified in its employment offer letters.
- Yale implemented a new purchasing system in July 2017 and did not have adequate procedures in place to ensure that it paid subaward invoices in a timely manner.
- Yale’s procurement processes were not always sufficient to ensure that Yale did not make payments to organizations that were suspended or debarred from receiving Federal funding.
- Yale’s procurement processes did not always ensure PSCAs were sufficiently detailed to support the services to be provided or how Yale would reimburse the consultants/vendors.
- Yale’s procurement processes did not prevent it from paying consultants more than \$10,000 without a PSCA in place if the consultants submit multiple check requests/invoices that are less than \$10,000.

As a result, we identified 11 compliance exceptions in which Yale did not comply with its internal policies when charging costs to NSF awards, as illustrated in Table 8.

Table 8. Non-Compliance with Yale Policy

NSF Award No.	Compliance Exception Identified
[REDACTED]	Travel comparison not appropriately performed for an itinerary that included personal travel.
[REDACTED]	Summer effort report not appropriately generated or certified.
[REDACTED]	Summer effort report not appropriately generated or certified.
[REDACTED]	Yale did not use approved salary and fringe benefit rates.
[REDACTED]	Subaward invoice not paid within 30 days of receipt.
[REDACTED]	Subaward invoice not paid within 30 days of receipt.
[REDACTED]	Consultant costs not supported by a purchase requisition.
[REDACTED]	Professional services and consulting agreement not sufficiently detailed.

NSF Award No.	Compliance Exception Identified
[REDACTED]	Lack of appropriate verification that a vendor was not suspended or debarred from receiving Federal funding.
[REDACTED]	Professional services and consulting agreement not appropriately created.
[REDACTED]	Professional services and consulting agreement not sufficiently detailed.

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

Recommendations

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

1. Direct Yale to publish specific guidance regarding how travelers should document travel that includes both personal and business travel. The guidance should address how the traveler must support that their travel costs did not increase due to the inclusion of personal travel.
2. Direct Yale to strengthen its policies and procedures surrounding the creation and retention of documentation, including introducing additional controls to help ensure that Yale appropriately creates and maintains all documentation necessary to support the allowability of expenses charged to sponsored programs.
3. Direct Yale to strengthen its administrative and management procedures related to the effort certification process. The updated procedures should enable Yale to identify any uncertified effort charged to sponsored programs.
4. Direct Yale to strengthen its administrative and management procedures surrounding the establishment of temporary appointments. The updated procedures should require additional oversight of the processes used to create temporary appointments.
5. Verify that Yale has updated its subaward invoicing payment procedures within the Workday system to ensure that personnel review and approve all subaward invoices within 30 days of receipt, unless there is reason to believe the request for payment is improper.
6. Direct Yale to strengthen its administrative and management procedures surrounding the procurement of consulting services. Updated processes could include:
 - a. Providing annual training to principal investigators and other departmental personnel responsible for approving consultant costs. This training should emphasize:
 - i. The requirement that Yale complete purchase requisitions and, when the purchase exceeds \$10,000, professional services and consulting agreements for consultants before the consultants begin providing services.

- ii. The type of information that should be included in the professional services and consulting agreement, including the total amount obligated for the consultant and when and how the consultant should invoice Yale for the services provided.
 - b. Implementing a control to flag each vendor that has invoiced more than \$10,000 in services to a single funding source if Yale has not executed a professional services and consulting agreement with that vendor.
 - c. Implementing a control to flag proposed payments to independent contractors that require appropriate procurement personnel to validate a purchase requisition has been completed prior to processing the payment.
7. Direct Yale to strengthen its administrative and management processes surrounding the payment of invoices submitted by new vendors. Updated processes should ensure payments cannot be made to vendors unless Yale has verified the vendor is not suspended or debarred.

Yale University Response: Yale generally did not indicate agreement or disagreement with the exceptions identified within this finding; instead, it responded by addressing the adequacy of its policies and procedures. Specifically:

- With regard to the non-compliance with Yale travel policy exception for NSF Award No. [REDACTED] Yale stated that its policy is consistent with Federal sponsored award requirements, but that it will assess whether any updates are warranted related to documenting the costs of personal travel when coupled with a business trip.
- With regard to the non-compliance with Yale effort policy exceptions for NSF Award Nos. [REDACTED] and [REDACTED] Yale stated that it has a robust effort reporting policy, but that it will consider steps to enhance monitoring in situations where its effort reporting system will not generate an effort report.
- With regard to the non-compliance with Yale salary policy exception for NSF Award No. [REDACTED] Yale stated that the exception reflects a unique de minimis issue and that Yale made an adjustment to correct the individual's hourly pay rate by \$0.16.
- With regard to the non-compliance with Yale subaward policy exceptions for NSF Award Nos. [REDACTED] and [REDACTED] Yale stated that, although it believes its subaward policies, procedures, and trainings are adequate, it will continue to emphasize the 30-day payment requirement in communications and training opportunities.
- With regard to the non-compliance with Yale procurement policy exceptions for NSF Award Nos. [REDACTED] and [REDACTED] Yale stated that it had previously undertaken a broad review of its procurement policies and procedures, but that it will consider whether it should implement additional training or policy and procedural modifications in response to the audit findings.

- With regard to the non-compliance with Yale procurement policy exception for NSF Award No. [REDACTED] Yale stated that the finding was the result of a typographical error and that its current financial accounting system has a more robust system for reviewing vendors to ensure the vendors are not suspended or debarred.
- With regard to the non-compliance with Yale procurement policy exception for NSF Award No. [REDACTED] Yale stated that it disagreed with the finding because it does not believe that a PSCA was the appropriate vehicle for an individual who was working as a non-employee under the direction of the PI. Specifically, Yale stated that, because this individual did not meet the Internal Revenue Service requirements for an independent consultant, this finding should be removed.
- With regard to the non-compliance with Yale procurement policy exception for NSF Award No. [REDACTED] Yale stated that it disagreed with the finding because the exception noted was an immaterial oversight. Specifically, Yale stated that, although the amount of the agreement was not identified in the PSCA, because the purchase order, “a legal document,” indicated the amount of the commitment, this finding should be removed.

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

- With regard to the non-compliance exceptions identified for NSF Award Nos. [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] and [REDACTED] our position regarding the finding has not changed.
- With regard to the non-compliance with Yale procurement policy exception for NSF Award No. [REDACTED] although Yale stated that a PSCA would not have been appropriate because it did not consider the individual to be a consultant, Yale Policy 3210, *Professional Services and Consulting*, does not state that Yale should only use PSCAs for “consultants” as defined by Internal Revenue Service standards; it only states that Yale must use PSCAs “for agreements that involve total aggregate payments in excess of \$10,000 per engagement” and only defines a PSCA as an “agreement between Yale and a qualified entity for the purchase of goods and/or services.” Accordingly, our position regarding this finding has not changed.
- With regard to the non-compliance with Yale procurement policy exception for NSF Award No. [REDACTED] although Yale stated that the finding should be removed because the amount of the commitment was included within the purchase order, because the purchase order was not sufficiently detailed to support how Yale calculated the payment amount, how the contractor would bill Yale for the services, and the scope of services to be provided, our position regarding this finding has not changed.



Megan Mesko, CPA, CFE
Partner
August 10, 2020

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING

NATIONAL SCIENCE FOUNDATION
ORDER # 140D0418F0439
PERFORMANCE AUDIT OF COSTS CLAIMED ON NSF AWARDS
YALE UNIVERSITY

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Questioned Costs		Total
		Unsupported	Unallowable	
1	Unallowable Expenses	\$0	\$108,144	\$108,144
2	Inappropriately Allocated Expenses	0	83,309	83,309
3	Professional Services Agreement Not Appropriately Executed	0	39,850	39,850
4	Internal Service Provider Rates Not Appropriately Billed	0	15,252	15,252
5	Indirect Costs Not Appropriately Applied	0	5,418	5,418
6	Accounting System Unable to Adequately Identify Expenses Related to Costs Drawn Down in ACM\$	0	0	0
7	Incorrect Application of Indirect Cost Rates	0	0	0
8	Non-Compliance with Yale Policies	0	0	0
Total		<u>\$0</u>	<u>\$251,973</u>	<u>\$251,973</u>

APPENDIX B: YALE UNIVERSITY RESPONSE

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July 20, 2020

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Subject: Yale University Performance Audit of Incurred Costs for National Science Foundation ("NSF") Awards for the period February 1, 2016 ending January 31, 2019

Dear Ms. Mesko:

Yale University is committed to the proper stewardship of its federal funding. Audits such as this one are an opportunity for the University to continue to evaluate its policies and procedures and enhance them where necessary. As Yale reviews Cotton & Company's Recommendations, the University will consider appropriate changes to its sponsored awards management operations with a focus on ensuring compliance with federal regulations, sponsor terms and conditions, and University policy.

The University has appreciated the interaction with the audit team as we resolved a number of findings. For the remaining audit issues, we provide the following information and responses.

Background

Yale disagrees with the Auditors' statement that "Yale was unable to identify which expenditures reported in its general ledgers (GLs) represented the \$99 million. As a result, our audit population included only the \$96 million in expenses that Yale charged to...465 NSF awards." As noted in Footnote 3 of the Audit Report, the apparent variance between the \$99 million drawn and the audit population of \$96 million was \$3 million drawn at the beginning of the first month of the audit period to reimburse expenses incurred prior to the audit period. Thus, there is no actual variance as evidenced by the University's ability to comply with the Auditors' request to provide precise cash reconciliations of 16 awards.¹

Yale University's Response to Audit Report Recommendations:

With respect to the Recommendations listed in the Audit Report, the University believes that it has developed and implemented a robust suite of policies and procedures to effectively manage sponsored awards. To the extent that the Auditors' Recommendations identified opportunities for improvement,

¹ Also worth noting, and as further explained in the University's response to Finding 6, is that Yale's legacy financial system General Ledger included both settled and unsettled expenses, which required the University to calculate cash needs using a methodology different than that used in the current Workday system.

Yale will evaluate potential enhancements to certain policies, procedures, processes, and related training materials.

Finding 1: Unallowable Expenses

NSF Award Number: [REDACTED]

Questioned Cost: \$25,082

Yale University's Response:

The University does not agree with this questioned cost determination. With respect to Award [REDACTED] Yale disagrees that one-half-month of a Principal Investigator's ("PI's") summer salary is unallowable because the University did not follow an internal procedure governing a faculty member's ability to charge 3 months of summer compensation to sponsored awards.

The relevant NSF Proposal & Award Policies & Procedures Guide ("PAPPG") and 2 C.F.R. § 200 permit the payment of summer compensation commensurate with effort devoted to the project. In this case, the PI certified to the effort devoted on the NSF-funded project. In addition, in keeping with University policy, the PI requested and received approval for 3 months of summer salary, indicating all the funding sources that were to be used.

In this case, after the original 3-month requests were approved, the payroll distribution was changed to add the NSF award as a funding source but an internal approval was not obtained. Specifically, the University permits faculty with a 9-month academic appointment to receive and charge an additional 2.5 months of compensation during the summer to sponsored awards. With approval of the Provost's Office, as indicated in Policy 1316, a faculty member may receive and charge 3-months of summer compensation to sponsored awards.

While the absence of the internal approval was not consistent with University policy, it did not represent noncompliance with federal regulations or NSF award terms and conditions. Yale, therefore, maintains that in this instance, payment of certified summer compensation is an allowable cost.

NSF Award Number: [REDACTED]

Questioned Cost: \$1,069

Yale University's Response:

The University does not agree with this questioned cost determination and believes that the costs are allowable under 2 C.F.R. § 200.421(d)(2). The Auditors questioned this cost on the basis that it constitutes unallowable promotional items. The materials purchased, however, were not for the purpose of promoting Yale, but instead were used to disseminate information and promote one of the goals of the NSF award: the formation of an educational consortium to meet one of the award's stated objectives of education, outreach and creating awareness among target groups. As a result, the cost is allowable.

The retractable banners/posters were used at various conferences and workshops to inform the attendees of the related consortium activities thereby furthering the aims of the NSF-supported project. Dissemination of information, creating awareness of NSF-supported projects, and sharing accomplishments are key requirements of NSF awards and are recognized by 2 C.F.R. § 200.421(d)(2) as allowable activities. In addition, the project outreach activities and coordinating center activities are described in great detail in the original proposal; the formation of the MoDRNetwork as a tool for dissemination of new learnings is described in the first and subsequent RPPRs.

Finding 2: Inappropriately Allocated Expenses

Yale allocated expenses to NSF awards based on the relative benefit to the awards, as required by federal regulations and the applicable NSF PAPPG. Moreover, in the two instances of equipment purchases cited below, the University followed its policies and procedures and ordered allowable and appropriately allocable equipment well before the end of each award.

Purchases Near Grant Expiration

NSF Award Number: ██████████

Questioned Cost: \$20,166

Yale University's Response:

The University does not agree with this questioned cost determination and considers the cost of the laser in question an allowable and appropriately allocated expense. Yale ordered the laser more than 4 months prior to the end of the award but, due to manufacturer delays outside of Yale's control, delivery took longer than anticipated. Specifically, the funds were obligated in May 2017 and the invoice approved for payment in mid-August 2017, after receipt of the equipment, and well before the award ended on September 30, 2017.

During the delay period, the manufacturer performed, at Yale's request, experiments and analyses to determine the required laser settings for the materials, cooling rates, and laser-affected zones that were proposed in the NSF-DMREF proposal. The NSF award thus benefited from the laser even before it was delivered to Yale and progress, comparable to that which would have occurred if the laser had been at Yale, was made.

While the manufacturer was conducting the requested experiments and analyses, the PI and his team were building the "set-up" according to i) the specifications of the laser and testing results from the manufacturer on the specific material, and ii) proposed materials to be studied for metallic glass formation, which were suggested by a collaborator's computer calculations as part of the project. Designing and building the set-up included the vacuum system, communication between the stage required to move samples under the laser, the laser power signal, and vacuum level requirements specifically for the alloys suggested by the collaborator. In addition, very elaborate sample preparation to fabricate the metallic glass libraries was carried out in preparation for the actual experiments.

Finally, because the specifications of this laser were not compatible with the needs of one other contemporaneous award with a different line of research, the cost of the laser could not have been allocated to any other sponsored funding source.

Purchases Near Grant Expiration

NSF Award Number: ██████████

Questioned Cost: \$38,411

Yale University's Response:

The University does not agree with this questioned cost determination. In January 2016, the PI determined that existing equipment did not have sufficient resolution for some of the NSF proposed research and began a search for a better instrument (laser). After identifying an appropriate piece of equipment, Yale completed the purchase requisition on February 25, 2016 and issued a purchase order on March 1, 2016. As indicated on the invoices, part of the order was shipped on March 5, 2016 and the remainder on April 29, 2016. The award ended on May 31, 2016. The equipment was utilized while it underwent a period of extensive testing prior to payment, which was not released until May 17, 2016, after testing was completed, and the equipment had been confirmed as being satisfactory. During the

testing period and the remaining time of this award, the equipment produced high quality results that directly benefited the NSF award and that, importantly, were necessary to complete the proposed research (as noted, existing equipment lacked the necessary resolution).

Finally, because the laser did not benefit the research needs of any another contemporaneous award, the cost of the laser could not have been allocated to any other sponsored funding source.

Finding 3: Professional Services Agreement Not Appropriately Executed

NSF Award Number: [REDACTED]

Questioned Cost: \$39,850

Yale University's Response:

The University does not agree with this questioned cost determination. The expense in question, though initially not supported by an agreement, was necessary and benefited the NSF award. Not only was Yale a licensee of the software ([REDACTED]) developed by [REDACTED], but also the software was a critical component of the NSF project as described in the NSF proposal. As the developer of the software [REDACTED] was uniquely positioned to provide, on a sole-source basis, necessary software engineering and support services required by the project.

While the department did not timely follow the University's procurement requirements, the services were necessary to perform the award and were fully allocable and allowable. As a result of the audit, a professional services agreement was issued to the vendor and remains in effect for the entire period of the award. Under this agreement, the University expects to charge the NSF award up to the full amount of \$39,850 for services provided to the award since its inception. The University believes this transaction should at most, be characterized as a compliance issue rather than as a questioned cost.

Finding 4: Internal Service Provider Rates Not Appropriately Billed and Supported

NSF Award Number: [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

Questioned Cost: \$12,855

Yale University's Response:

The University does not agree with this questioned cost determination. Although the University did not always follow its Internal Service Provider policy, its retroactive analyses demonstrated that the rates used during the audit period were appropriate, benefited the NSF awards, and did not discriminate against federal awards. Specifically,

- Storage@Yale (\$9,477): This ISP storage service became available for use in FY17, replacing a service called Research Storage. The Storage@Yale service had a rate calculated in April 2016 that was provided to the relevant University office at that time. In short, the rate structure for Storage@Yale existed and was reviewed prior to use, but the annual recalculation was not completed in subsequent years as required by University policy, though not by federal regulations.

During the audit, the Storage@Yale rate was reviewed and the University demonstrated to the Auditors that the initial Storage@Yale rate of \$10.78/TB did not need to be adjusted in subsequent years, was a properly calculated cost, and benefited federal awards in particular because it was subsidized by the University. It is important to note that Storage@Yale charges

for FY17 are allowable under the circumstances described above, even though subsequent year rates did not undergo the Yale-required recalculation, because the FY17 rate was the first year of the ISP service and any over/under adjustments would not have been necessary until FY18.

- Other ITS Services (\$1,388): Yale acknowledges certain “other services” were not supported by existing calculated rates at the time the services were provided. The University, however, did provide the Auditors retroactive rate analyses demonstrating that the rates used were appropriate. It should be noted that the “other services” rates applied to NSF awards during the audit period were less than the calculated rates included in the ISP’s cost buildup.
- Research Storage (\$1,990): This data storage service rate was based on a 2011 quote from a vendor for a similar service. At the time, ITS’s business practice was to evaluate its rates on a five-year cycle, coincident with the review of its technology platform. The University recognizes that ITS did not submit annual rates for the storage service; nevertheless, as demonstrated by the University during the audit, the rates developed for services chargeable to federal awards continued to be lower than actual costs of the service.

As a result of the information provided earlier to the Auditors and herein, we believe that these particular ISP charges are allowable. At most, they constitute technical compliance issues.

Yale University’s Response to Recommendations 3, 4, and 5:

Over the past year and a half, and unrelated to this audit, the University revised its policy and procedures related to the creation, charging, and monitoring of ISPs. These changes address many of the recommended administrative and managerial process changes in the Audit Report and comply with the requirements of 2 C.F.R. § 200. The revised [policy](#) and [procedures](#) were posted on the University’s website on June 8, 2020 and training was conducted during May and June 2020.

Finding 5: Indirect Costs Not Appropriately Applied

NSF Award Number: ██████████

Questioned Cost: \$5,418

Yale University’s Response:

The University agrees that the F&A costs associated with the transaction were inappropriately applied. Yale Facilities originally charged costs to a departmental account and the department transferred these costs to the NSF award using an incorrect F&A bearing expenditure type, which resulted in F&A costs being inadvertently charged to the award.

Yale University’s Response to Finding 5 Recommendations:

The University disagrees with the need for Recommendation 3 which does not reflect the circumstances that led to the inadvertent application of F&A costs.

Finding 6: Accounting System Unable to Adequately Identify Expenses Related to Costs Drawn Down in ACM\$

Questioned Cost: \$0

Yale University’s Response:

The University disagrees with this Finding because the presumed issue cited no longer exists. During the audit period, the University had two financial systems, Oracle and Workday. Under the Oracle legacy system, the cash draw process was handled differently than under Workday. As part of a cluster test, the University clearly demonstrated that it could provide cash reconciliations for a total of 15 awards requested by the Auditors from both systems (1 additional reconciliation was requested during the survey phase). Importantly, these reconciliations demonstrated that the University did not claim excess cash.

The University provided descriptions to the Auditors of each of its financial systems related to cash draws:

Oracle: Prior to July 1, 2017, the University calculated the total amount of cash to draw down each month by (1) identifying the total NSF award expenditures recorded in the GL; (2) subtracting the total of any cash previously received, any over-expenditures, and at-risk expenditures from the Step 1 total; and (3) reducing the total from Step 2 by 10 percent to exclude any unsettled expenses. As a result, the amount the University drew down in ACM\$ each month was less than the total award expenditures recorded in the GL.

As part of this cash management process, a manual review of each award was performed on each ACM\$ draw to determine the amount to be drawn down. The relevant regulations do not prohibit manual reconciliations, and, as demonstrated to the Auditors during the survey and audit phases, the University was able to reconcile cash drawdowns on an individual award basis.

Workday: Yale implemented Workday Financials in July 2017. The Workday sponsor invoicing feature that automatically excludes unsettled expenses to determine billable costs was implemented in November 2017. The Workday-generated invoices support the monthly cash draw-down process; these invoices comprise settled expenditures and are the basis for the cash draw.

Because there is no requirement for the University to draw cash equal to settled expenses nor is the University prohibited from manually reconciling cash, Yale's cash management procedures complied with federal requirements. The University demonstrated its ability to reconcile source and application of funds by providing the requested reconciliations of 16 NSF awards. Furthermore, the Audit Report's statement of non-compliance regarding the source and application of funds is moot to the extent this issue related only to Yale's legacy system (Oracle) and the first few months of Workday. This Finding should be withdrawn.

Yale's Response to Finding 6 Recommendation:

The University believes that this Recommendation is moot because Yale's implementation in November 2017 of Workday's invoice billing process obviates the need for the Recommendation.

Finding 7: Incorrect Application of Provisional/Final Indirect Cost Rates

NSF Award Number: [REDACTED]

Questioned Cost: \$0

Yale University's Response:

The University disagrees with this Finding. Yale applied a provisional rate to awards made during the provisional rate period. Once a negotiated rate was established for the provisional period (in Yale's case,

a “final” rate of 66.5% which was identical to the provisional rate), the final rate was applied for the life of the award to all NSF awards made during the provisional period as required by both 2 C.F.R. § 220 and 2 C.F.R. § 200 Appendix III C. 7.

The Auditors assert that Yale should have applied an indirect cost rate of 67.5% to all direct costs charged after July 1, 2016 to awards initially made between July 1, 2014 and September 18, 2015 at which time the negotiated rate in effect was 66.5%. As stated in 2 C.F.R. § 200 Appendix III C.7. ,

“Except as provided in paragraph (c)(1) of § 200.414 Indirect (F&A) costs, Federal agencies must use the negotiated rates in effect at the time of the initial award throughout the life of the Federal award. Award levels for Federal awards may not be adjusted in future years as a result of changes in negotiated rates. ‘Negotiated rates’ per the rate agreement include final, fixed, and predetermined rates and exclude provisional rates. ‘Life’ for the purpose of this subsection means each competitive segment of a project. A competitive segment is a period of years approved by the Federal awarding agency at the time of the Federal award. If negotiated rate agreements do not extend through the life of the Federal award at the time of the initial award, then the negotiated rate for the last year of the Federal award must be extended through the end of the life of the Federal award.”

The relevant NSF PAPPGs define a provisional rate as a temporary indirect cost rate that is applicable to a specified period which is used for funding, interim reimbursement, and reporting indirect costs pending the establishment of a final rate for the period. In addition, adjustments to awards for amounts previously billed at a provisional rate are required after final indirect cost rates are established. A final rate is defined as an indirect cost rate applicable to a specified past period which is based on the actual costs of the period and is not subject to adjustment.

Based on the language quoted above from 2 C.F.R. § 220 and 2 C.F.R. § 200 Appendix III C. 7 and the NSF PAPPGs, if Yale’s “final” rate had been lower than the provisional rate, then for all awards made during the provisional rate period, the F&A rate would have to have been adjusted downward to the “final” rate. Similarly, if the final rate had been higher than the provisional rate, then Yale would have had to adjust the applicable rate upward. In Yale’s case, because the final and provisional rates were identical, no adjustment had to be made at all. Nothing in the Audit Report supports the Auditors’ position that a predetermined rate available in the third year of the NICRA should have been applied to the awards made in the first year of the NICRA.

In Yale University’s situation, its NICRA dated September 18, 2015, included the following research rates:

- Final Rate 7/1/2014 – 6/30/2015 66.5%
- Predetermined Rate 7/1/2015 – 6/30/2016 66.5%
- Predetermined Rate 7/1/2016 – 6/30/2018 67.5%

All three of these rates are considered to be “negotiated” rates and are to be used pursuant to the “life of the award” restriction, which requires a single rate for a competitive segment (for NSF awards, the period of performance). The University believes it correctly applied the negotiated rates identified in the NICRA.

Finding 8: Non-Compliance with Yale Policies
Non-Compliance with Yale Travel Policy

NSF Award Number: [REDACTED]
Questioned Cost: \$0

Yale University's Response:

The University's Travel policy is consistent with federal sponsored award requirements. The University will, however, assess whether any updates are warranted related to documenting the costs of personal travel when coupled with a business trip.

Non-Compliance with Yale Effort Policy

NSF Award Number: [REDACTED] [REDACTED]
Questioned Cost: \$0

Yale University's Response:

The University has a robust effort reporting policy, procedures, and training program. The two discrete situations to which this non-compliance refers involve scenarios under which the University's effort reporting system would not generate effort reports. During the audit, the affected academic departments were notified of the issue and manual effort reports were generated and certified. Nevertheless, the University will consider whether steps should be taken to enhance monitoring of situations where the system will not generate an effort report.

Non-Compliance with Yale Salary Policy

NSF Award Number: [REDACTED]
Questioned Cost: \$0

Yale University's Response:

The finding associated with this award, we believe, reflects a unique situation and a *de minimis* issue. Subsequent to discovery, an adjustment was made correcting the hourly rate of pay by \$0.16. As noted by the Auditors, the salary expense appeared allocable to the award and no costs related to this transaction were questioned.

Non-Compliance with Yale Subaward Policy

NSF Award Number: [REDACTED] [REDACTED]
Questioned Cost: \$0

Yale University's Response:

The University's subaward-related policy, procedures, and training adequately address the 30-day payment requirement of 2 C.F.R. § 200 for subawardee invoices. As a result of the two instances identified during the audit, the University will continue to emphasize the 30-day payment requirement in communications and training opportunities and continue to utilize the *Subaward Invoice Aging in Progress – Yale Report* as a monitoring tool in order to mitigate potential human errors.

Non-Compliance with Yale Procurement Policies

NSF Award Number: [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
Questioned Cost: \$0

Cotton & Company's Findings:

- *In April 2016, Yale charged NSF Award No. [REDACTED] for \$8,325 in consultant costs that appeared to be reasonable and necessary for the completion of the award; however, the services were not*

² It should be noted that Footnote 18 of the Audit Report related to the Unallowable Duplicate Expenses finding is inaccurate. One of the subaward invoice payments was not cashed; the University cancelled the payment.

supported by a purchase requisition.

- *In September 2016, Yale charged NSF Award No. [REDACTED] for \$17,989 in costs incurred for a vendor to design and implement a software application, as outlined in the award proposal. Yale created a PSCA to support the services; however, the PSCA did not identify how the vendor would invoice Yale for the services provided.*
 - *As the billed rates appear reasonable and consistent with the award budget and the scope of work outlined in the award proposal, we are not questioning any costs associated with this exception.*

Yale University's Response:

The University had previously undertaken a broad review of its Procurement Policies and Procedures and will consider whether additional training or policy and procedural modifications need to be made in response to the Audit Report Findings and observations contained therein.

- *In July 2017, Yale charged NSF Award No. [REDACTED] for \$84,315 in materials costs that Yale paid before verifying that the vendor was not suspended or debarred from receiving Federal funding.*

Yale University's Response:

This Finding is the result of a typographical error in the spelling of the vendor's name. The University did perform a more recent search to demonstrate that the vendor is not and has never been suspended or debarred. Additionally, as reported to the Auditors, at the time of the transaction, the University was using its legacy Oracle financial system to review vendors to verify that they were not suspended, debarred, or otherwise excluded from federal contracting. Subsequent to replacement of the Oracle system, and prior to this audit, the University implemented a more robust system to review vendors.

- *Between May and July 2018, Yale charged NSF Award No. [REDACTED] for \$15,000 in check-request payments made to the Entrepreneurial Lead (EL) of this award. The services that the EL provided appear to be allocable to this award; however, Yale did not execute a PSCA that outlined the scope of EL's responsibilities and the cost of the services.*
 - *Because the approved grant budget identified both the EL and the amount of the payment and the PI signed and approved the departmental check requests provided to the EL, we are not questioning costs associated with this exception.*

Yale University's Response:

The University disagrees that this transaction represents non-compliance with Yale procedures. The situation was unusual, wherein a non-Yale individual was a critical participant in a Yale award (the EL for NSF's I-Corps program). We do not believe that a PSCA was the appropriate vehicle for an individual who was working as a non-employee under the direction of the PI and who did not meet the IRS requirements for an independent consultant. This Finding should be removed.

- *In July 2018, Yale charged NSF Award No. [REDACTED] for \$18,292 in costs incurred to obtain software development, front-end production, reporting, support, and training services. Yale created a PSCA to support these services; however, the PSCA did not include an agreed-upon payment amount for the services to be rendered.*

- *As the total paid was supported by a purchase order, and the rates billed appear reasonable and consistent with the award budget and the scope of work outlined in the award proposal, we are not questioning any costs associated with this exception.*

Yale University's Response:

The University disagrees with this compliance finding. This was an immaterial oversight. Though the amount of the agreement was not identified in the PSCA, the Purchase Order, a legal document, indicated the amount of the commitment. This Finding should be removed.

The University looks forward to working with the NSF's Division of Institution and Award Support to resolve the remaining issues contained in the report and in this response. If you have any questions regarding the information contained in this response, please contact Ms. Alice Tangredi-Hannon, University Research Compliance Officer at alice.tangredi-hannon@yale.edu for assistance.

In closing, we would like to thank you and your staff for the professionalism exhibited throughout the audit process.

Sincerely,



Michael Crair
Vice Provost for Research

 Digitally signed by
Stephen Murphy
Date: 2020.07.20
15:34:58 -04'00'

Stephen C. Murphy
Vice President for Finance
& Chief Financial Officer

APPENDIX C: OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES, SCOPE, AND METHODOLOGY

The NSF OIG Office of Audits engaged Cotton & Company LLP (referred to as “we”) to conduct an audit survey, the objective of which was to evaluate Yale University’s award management environment to determine whether any further audit work was warranted, to recommend a path forward as described in the task order performance work statement, and then to perform any additional audit work, as determined appropriate.

Accordingly, we conducted this engagement in two phases, as follows:

Audit Survey Phase: After obtaining NSF OIG’s approval for our audit plan, we performed all of the audit survey steps outlined in the plan. Generally, these steps included:

- Assessing the reliability of the GL data that Yale provided by comparing the costs charged to NSF awards per Yale’s accounting records to the reported net expenditures reflected in the ACM\$ drawdown requests.
 - Our work required us to rely on computer-processed data obtained from Yale and NSF OIG. NSF OIG provided award data that Yale reported through ACM\$ during our audit period.
 - We assessed the reliability of the GL data that Yale provided by (1) comparing the costs charged to NSF awards per Yale’s accounting records to the reported net expenditures reflected in the ACM\$ drawdown requests that Yale submitted to NSF during the audit survey POP; and (2) reviewing the parameters that Yale used to extract transaction data from its accounting systems. Specifically, we found that, as a result of the ACM\$ drawdown methodology that Yale had in place prior to November 2017 (see Finding 6 within the audit report), Yale was unable to provide detailed transaction-level data that would reconcile to the \$99 million in costs it drew down on NSF awards during the audit period. Yale therefore provided transaction-level data to support all costs it charged to NSF awards during the audit period.⁶⁷ Although Yale provided transaction-level data to support costs charged to NSF awards between February 1, 2016, to January 1, 2019, because the final ACM\$ drawdown Yale made during the audit period was on December 21, 2018, for costs it charged to NSF awards in November 2018, we did not include Yale’s December 2018 or January 2019 data in our audit population.⁶⁸ As a result, our audit population included only the \$96 million in expenses that Yale charged to NSF awards from February 1, 2016, to November 30, 2018, as recorded within its Oracle and Workday accounting systems. Based

⁶⁷ Yale was unable to identify which costs recorded in its accounting systems represented the \$99 million it claimed during the POP but stated that the \$3 million discrepancy between the \$96 million audit population and the total amount that it drew down in ACM\$ represented expenses incurred prior to January 31, 2016, that it drew down on February 8, 2016.

⁶⁸ Yale was unable to draw December 2018 or January 2019 expenses during our audit period as a result of a government shut-down.

on this updated audit population and our conversations with the NSF OIG, we found Yale's computer-processed data to be sufficiently reliable for the purposes of the audit survey.

- We found NSF'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 2019 found no reportable instances in which NSF's financial management systems did not substantially comply with applicable requirements.
- Our total audit universe included \$96,243,119 in costs claimed on 465 NSF awards.
- Obtaining and reviewing all available accounting and administrative policies and procedures, external audit reports, desk review reports, and other relevant information that Yale and NSF OIG provided, as well as any other relevant information that was available online.
- Summarizing our understanding of Federal, NSF, and Yale-specific policies and procedures surrounding costs budgeted for and/or charged to NSF awards and specifically identifying the controls in place to ensure that costs charged to sponsored projects were reasonable, allocable, and allowable.
- Evaluating the strengths and weaknesses of the policies and procedures that Yale has in place to control the inherent, fraud, and control risks identified for each budget category.
- Providing Yale with a list of 39 transactions that we selected based on our data analytics and requesting that Yale provide documentation to support each transaction.
- Reviewing the supporting documentation that Yale provided and requesting additional documentation as necessary to ensure that we obtained sufficient, appropriate evidence to enable us to assess the allowability of each sampled transaction.
- Holding interviews and walkthroughs to discuss payroll (including effort reporting), fringe benefits, travel, participant support costs, procurement, equipment (including performing an inventory check), the graduate research fellowship program, other direct costs (including publication, patent, interest, insurance, rental, advertising, training, proposal-writing, alteration, recruiting, visa, furnishing, and conference/workshop costs), other general policies (including how Yale monitors pre-award costs, program income, and whistleblower hotlines), grant closeout procedures, ACMS drawdown procedures, and conflict of interest policies.
- Preparing an organizational risk assessment that (1) summarized the results of our planning/initial fieldwork, (2) included areas of elevated risk of noncompliance that we identified in the organization's award management environment, and (3) contained our recommendations for expanded testing.

Based on the areas of elevated risk of noncompliance identified during the survey phase, we determined that we should perform further audit procedures, which included:

- Conducting additional data analytics, evaluating the results of the analytics, and re-running analytical tests, as necessary.
- Selecting an additional audit sample of 211 transactions to enable us to perform a full cost-incurred audit of 250 transactions.
- Conducting additional fieldwork, which included providing the list of 211 transactions to Yale and requesting/reviewing supporting documentation until we had obtained sufficient, appropriate evidence to enable us to assess the allowability of each sampled transaction.
- Conducting additional audit work in three areas to evaluate whether Yale (1) inappropriately drew down funding from NSF's ACMS, (2) appropriately accounted for stipends awarded through NSF's Graduate Research Fellowship Program, and (3) appropriately charged NSF awards for services billed by its ISPs using formally established rate sheets.⁶⁹

At the conclusion of our fieldwork, we provided a summary of our results to NSF OIG personnel for review. We also provided the summary to Yale personnel to ensure that Yale was aware of each of our findings and that it was not able to provide any additional documentation 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.

⁶⁹ For the purposes of this additional audit testing, we only examined whether Yale's ISPs billed NSF awards using service center rates that were supported by the rate sheets maintained by its cost accounting service department. We performed testing to evaluate whether the ISPs appropriately charged the rates developed and did not perform any testing to evaluate whether the ISPs had appropriately developed those rates in compliance with Federal regulations.

APPENDIX D: TABLE 4 COMPLIANCE EXCEPTION DETAILS

Exception Description	ISP Center	NSF Award Nos. Affected
ISP Rate Sheets Contained Errors	ISP010, ISP011, ISP019, ISP024, ISP043, ISP044, ISP045, ISP046, ISP047, ISP058, ISP477, ISP633, ISP904, ISP917, ITSKCK, YRISPS	[REDACTED]
Sponsored Project Rate Higher Than Non-Sponsored Rate	ISP904	[REDACTED]
Insufficiently Detailed ISP Invoices	CINSTR, ISP011, ISP043, ISP058, ISP455, YRISPS	[REDACTED]
Billed Rates Not Sufficiently Supported	ISP011, ISP024, ISP477	[REDACTED]



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