



# At a Glance

## Performance Audit of Incurred Costs — Purdue University

Report No. 17-1-003, March 20, 2017

### Audit Objective

The National Science Foundation (NSF) Office of Inspector General (OIG) engaged WithumSmith+Brown (WSB) to conduct a performance audit of incurred costs at Purdue University (PU) for the period April 1, 2012, to March 31, 2015. The audit encompassed more than \$238 million comprising all costs claimed to NSF. The objective of the audit was to determine if costs claimed by PU during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable Federal financial assistance requirements.

WSB is responsible for the attached auditor's report and the conclusions expressed in this report. The NSF OIG does not express any opinion on the conclusions presented in WSB's audit report.

### Recommendations

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

### Contact Information

For further information, contact the NSF OIG at (703) 292-7100 or [oig@nsf.gov](mailto:oig@nsf.gov).

### Audit Results

Costs PU charged to its NSF-sponsored agreements did not comply with Federal and NSF award requirements. The auditors questioned \$91,281 of costs claimed by PU during the audit period. Specifically, auditors found:

- \$36,437 in unreasonable travel;
- \$28,984 in unreasonable expenditures;
- \$25,011 in equipment, materials, and supplies unreasonably purchased near the award expiration date; and
- \$849 in insufficiently documented travel charges.

### Agency Response

PU disagreed with the four findings in the report. PU contends that the costs within the findings are allowable and disagreed with the auditors' interpretation of the Federal guidance. PU also did not agree with the auditors' statements that there were weaknesses in management and administrative controls. After taking PU's comments into consideration, the auditors continue to question the costs and left the findings unchanged.

Although PU disagreed with the fourth finding, it concurred it did not have adequate documentation to support the claimed costs.

PU's response is attached in its entirety to the report as Appendix A.



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

MEMORANDUM

Date: March 20, 2017

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

Jamie French  
Director, Division of Grants and Agreements

From: Mark Bell  
Assistant Inspector General, Office of Audits

A handwritten signature in black ink, appearing to read 'M Bell', written over the printed name 'Mark Bell'.

Subject: Audit Report No. 17-1-003  
Purdue University

This memo transmits the WithumSmith+Brown (WSB) report for the audit of costs totaling approximately \$238 million charged by Purdue University to its sponsored agreements with the National Science Foundation (NSF) during the period April 1, 2012, to March 31, 2015. The objective of the audit was to determine if costs claimed by Purdue University during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable Federal financial assistance requirements.

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

OIG Oversight of Audit

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

- reviewed WSB'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 WSB and NSF officials, as necessary, to discuss audit progress, findings, and recommendations;

- reviewed the audit report prepared by WSB to ensure compliance with generally accepted government auditing standards; 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 703-292-4989.

Attachment

cc: Alex Wynnyk, Staff Associate for Oversight, DIAS  
Rochelle Ray, Branch Chief, Resolution and Advanced Monitoring Branch, DIAS  
John Anderson, Chair, Oversight Committee, NSB  
Christina Sarris, Assistant General Counsel, OD  
Ken Chason, Counsel to the Inspector General, OIG

**Purdue University**  
**Audit of Incurred Costs for**  
**National Science Foundation Awards**  
**For the Period April 1, 2012 to March 31, 2015**

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## ACRONYMS

CFR	Code of Federal Regulation
DIAS	Division of Institution and Award Support
NSF	National Science Foundation
OIG	Office of Inspector General
OMB	Office of Management and Budget
PI	Principal Investigator
Purdue	Purdue University
SC	Steering Committee

## **Independent Auditors' Report**

The National Science Foundation (NSF) is an independent Federal agency created by the *National Science Foundation Act of 1950 (P.L. 810-507)*. Its mission is “to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense.” NSF is also committed to ensuring an adequate supply of the Nation’s scientists, engineers, and science educators. NSF funds research and education in science and engineering by awarding grants and contracts to educational and research institutions in all parts of the United States. Through grants, cooperative agreements, and contracts, NSF enters into relationships with non-federal organizations, including Purdue University (Purdue), to fund scientific research and educational initiatives.

Purdue is a multi-campus system designed to address the post-secondary educational needs in Indiana. In fiscal year 2015, Purdue received \$401 million in research and sponsored program awards. NSF was the largest single contributor at \$67 million. Because Purdue receives significant NSF awards, the NSF Office of Inspector General (OIG) selected Purdue for audit.

WithumSmith+Brown, under contract with the NSF OIG, audited the costs claimed by Purdue on NSF awards for the period beginning April 1, 2012, and ending March 31, 2015. The audit objective was to determine whether the costs claimed were allowable, allocable, and reasonable in conformity with NSF award terms and conditions and applicable Federal financial assistance requirements.

We conducted this performance audit in accordance with generally accepted government auditing standards, which 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. Our objectives, scope, and methodology are detailed in Appendix B.

## **Results in Brief**

To aid in determining reasonableness, allowability, and allocability of costs, we obtained from Purdue all award transactions comprising costs claimed on NSF awards during the period of April 1, 2012, through March 31, 2015. This provided an audit universe of approximately \$238 million, in approximately 494,000 transactions, across 892 individual NSF awards. For transaction testing, we judgmentally selected 252 transactions totaling \$2.16 million and utilized a data analytics approach to identify potential risk areas. We also performed additional non-transaction based tests as we deemed necessary.

Of the \$2.16 million in the transaction testing, our audit questioned \$91,281 of costs claimed on seven NSF awards because Purdue did not comply with Federal and NSF award requirements. Specifically, we noted: \$36,437 in unreasonable travel; \$28,984 in unreasonable expenditures; \$25,011 in equipment, materials, and supplies unreasonably purchased near the award expiration date; and \$849 in insufficiently documented travel charges. These questioned costs resulted in four areas identified where Purdue’s controls could be improved to ensure compliance with laws and regulations. Purdue did not agree with the questioned costs. The findings are outlined in our report and presented by award in Appendix C. Additional information concerning the questioned items was provided separately by the OIG to the Division of Institution and Award Support, Resolution and Advanced Monitoring Branch.

## Findings and Recommendations

### Finding 1 – Unreasonable Travel

We questioned \$36,437 charged to one NSF award for Principal Investigator (PI) travel that did not appear to benefit the award and was not reasonable or prudent. The travel expenditures were not consistent with the objectives stated in the award.

According to 2 Code of Federal Regulation (CFR) 220 (OMB Circular A-21), Appendix A, Section C, to be allowable for a Federal grant, a cost must be allocable to the Federal award and be necessary and reasonable for the administration and performance of the award. Furthermore, Appendix A, Section C.3, provides that a reasonable cost is one that a “prudent person would have incurred under similar circumstances.”

The primary focus of this award was to develop a software institute at Purdue dedicated for specific purposes. At NSF’s request, Purdue reduced the proposed project from \$610,978 to \$200,000. With this reduction, NSF requested that the award focus on institute activities, rather than the technical development activities. In the budget impact statement, Purdue stated that they would focus on activities aimed at identifying the key properties of the institute by meeting with representatives of various organizations. The institute was to be physically located at Purdue and included a PI team, a Steering Committee (SC), and the participation of the NSF-funded Center for the Science of Information.

The original “other direct costs” budget category included \$10,500 for graduate fee remissions and \$140,000 for conference-related expenses including food, room reservation, and travel for invited speakers, PIs, and SC members. As part of the reduction to focus on the institute, the other direct cost budget category was reduced to \$95,319, which included \$10,416 for graduate fee remissions and \$84,903 for funding to host conference meetings for the PIs and SC members.

Although there was no travel in the award budget, \$54,950 was spent on PI travel during our audit period. Our audit tested \$29,968 in PI travel and questioned \$22,492. Per Purdue, the travel expenditures were approved through the “other direct costs” line item; however, our assessment of the award focus and proposal found that those funds were to be used for institute-related conference events. The questioned travel appeared to be non-institute related travel that was more focused on the PI’s development rather than the development of the institute.

We found that the PI was on sabbatical from August [REDACTED], through May [REDACTED]. The documented reason for the sabbatical was to [REDACTED]. This focus on [REDACTED] does not appear to be related to the development of the institute. Per the sabbatical request, being co-located with the other investigators was crucial during the early stages of the work. Although these individuals appear to be headquartered in California, the PI charged NSF for trips to [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; and back to Purdue during the sabbatical.

Reallocating 33 percent of the total direct costs for non-institute related PI travel is not reasonable, prudent, or consistent with the stated award objectives. This travel was not related to the NSF-funded workshops and events per the revised proposal budget. The presentations at various conferences, workshops, educational institutions, and corporations were mentioned in the annual report<sup>1</sup> for the period ending September 30, 2013. However, no international travel was included in the annual or the final reports

<sup>1</sup> Annual and final reports are submitted to NSF to address the progress of a project.

submitted to NSF. We identified nine travel transactions, totaling \$34,638 (\$22,492 plus \$12,146 associated indirect costs), that appear to be outside the award scope of establishing a software center at Purdue. We note that several of the trips took place during the PI's sabbatical period, which was granted for purposes unrelated to the objectives of the NSF award. The following summarize the questioned travel costs:

- \$6,015 for travel to [REDACTED], and [REDACTED], from January [REDACTED], to present a paper, give a talk, attend a meeting, and meet with a company in [REDACTED]. The PI was on sabbatical during this trip;
- \$5,287 for travel to [REDACTED]; [REDACTED]; and [REDACTED] from August [REDACTED] to September [REDACTED], to collaborate with other researchers;
- \$5,212 for travel to a university in [REDACTED], from October [REDACTED], to give a presentation;
- \$3,840 for travel to [REDACTED], from September [REDACTED], to give a presentation at a university in [REDACTED], participate in a Higher Degree Research (HDR) committee and meet with other researchers. The PI was on sabbatical during this trip;
- \$3,142 for travel to [REDACTED], from September [REDACTED], to attend a [REDACTED] Meeting;
- \$2,924 for travel to [REDACTED], from [REDACTED] [REDACTED], to attend the [REDACTED] on [REDACTED] where he was a keynote speaker. The PI was on sabbatical during this trip;
- \$2,898 for travel to [REDACTED], from October [REDACTED], to visit a university to collaborate with other researchers;
- \$2,871 for travel to [REDACTED] from November [REDACTED], to visit [REDACTED] Research and [REDACTED] to further his collaboration towards the implementation of the [REDACTED]; and
- \$2,449 for travel to [REDACTED], from [REDACTED] [REDACTED], to attend the [REDACTED] Conference ([REDACTED]) as a guest speaker. The PI was on sabbatical during this trip.

Additionally, we questioned \$1,799 (\$1,168 plus \$631 associated indirect costs) for expenses related to personal time and a rental car charged to the NSF award during a trip to [REDACTED] from December [REDACTED], to January [REDACTED]. Purdue stated, "The words 'Personal Day' for the day 12/31 were typed on the line for 1/1 as there was no space available to type that information on the line for 12/31," but the documentation states that the employee was "taking 2 days off with [REDACTED] before the event starts." Therefore, we questioned \$1,147 for the personal expenditures charged to the NSF award. We also found that there were two rental cars charged to the NSF award and questioned \$652 for the extra rental car. It is unreasonable to charge the NSF award for personal days and two rental cars.

Purdue personnel did not adequately review the expenditures charged to NSF awards, which resulted in unreasonable travel costs. Without an effective process in place to ensure the reasonableness of the travel costs and consistency with the award objectives, there is the increased risk that funds may not be used as required to accomplish the necessary project objectives in accordance with Federal and NSF requirements.

#### *Recommendation 1:*

We recommend that the NSF's Director of the DIAS address and resolve the following Purdue recommendations:

- 1) Work with NSF to resolve the \$36,437 of questioned costs; and
- 2) Strengthen the administrative and management controls and processes for reviewing and approving costs charged to NSF awards for travel expenditures.

#### *Summary of Awardee Response:*

Purdue disagreed with our findings and recommendations and maintained that adequate evidence was provided. Per the university, the travel costs benefited the award and were reasonable and necessary in accordance with Federal cost principles. The costs were necessary to accomplish the objectives of the revised budget impact statement of the project. The processes for reviewing and approving expenditures were appropriate and there are no administrative and management control weaknesses. For the costs questioned, Purdue provided a detailed response as to why the institution believes the costs were necessary and reasonable and how they benefited the award.

See Appendix A for the complete Purdue response.

*Auditor Comments:*

For these costs that Purdue disagreed with, our conclusions remain unchanged. The additional information provided by Purdue did not change our view, as noted above in Finding 1, that these costs should be questioned. NSF requested that the award focus on institute activities, rather than the technical development activities. The questioned travel was not reasonable, prudent, or related to the NSF-funded workshops and events per the revised proposal budget. Therefore, the report finding and recommendations remain as stated.

*Finding 2 – Unreasonable Expenditures*

We found \$28,984 of unreasonable transactions charged to two NSF awards that were not in accordance with Federal cost principles.

According to 2 CFR 220, Appendix A, Section C, to be allowable for a Federal grant, a cost must be allocable to the Federal award and be necessary and reasonable for the administration and performance of the award. Section C.3 of 2 CFR 220 provides that a reasonable cost is one that a “prudent person” would have incurred under similar circumstances. Additionally, Section C.4 of 2 CFR 220 states that a cost is allocable to a sponsored agreement if it is incurred solely to advance the work under the sponsored agreement or it benefits both the sponsored agreement and other work of the institution in proportions that can be approximated through use of reasonable methods. The recipient institution is responsible for ensuring that costs charged to a sponsored agreement are allowable, allocable, and reasonable under these cost principles.

2 CFR 215.21 (OMB Circular A-110) states that recipients’ financial management systems shall provide for accurate, current, and complete disclosure of the financial results of each Federal sponsored project.

Specifically, we questioned \$18,480 charged for access to an outside laboratory in [REDACTED]. The annual fee was not explicitly budgeted in the proposal. Per the “Facilities, Equipment and Other Resources” statement in the award proposal, access to this laboratory was necessary and available. According to the NSF *Grant Proposal Guide*, resources in the Facilities statement are not considered cost sharing; however, the Foundation does expect that the resources identified will be provided, or made available, should the proposal be funded. Per Purdue, this was simply an omission in this first proposal written by the PI. The current grant that NSF awarded to the PI for similar research does include the facility fee in the budget justification. Previous fees had been paid for by the PI from other funds, but once this grant became available, the PI used the NSF funds for this fee. It is not reasonable to charge NSF the \$18,480 (\$12,000 plus \$6,480 associated indirect costs) for resources the proposal indicated were already available.

We also questioned \$10,504 (\$7,244 plus \$3,260 associated indirect costs) charged to the NSF award 3 ½ months after the award expired in May 2013. The general supplies were purchased between November 2010 and August 2012 and were not identified and posted to the NSF award until 3 months after the award expiration. Per Purdue, when it was discovered that the identified lab supplies had not been ordered using

the NSF award account number, the Co-PI met with the lab manager, and they reviewed all orders placed on the general fund during the life of the NSF award to identify orders used on the NSF project. A handwritten list of orders to be charged to the NSF award was developed. Purdue also stated that the lab manager was responsible for ordering supplies, but neither the Co-PI, lab manager, nor campus officials were familiar with sponsored program processes and therefore failed to charge the supplies to the NSF award. The error was not discovered until closing out the NSF Award. Given the circumstances under which these charges were identified, we question the reliability of retroactively determining whether general supplies were used on a project years after the supplies were purchased.

Purdue personnel did not adequately review the expenditures charged to NSF awards, which resulted in unreasonable costs. Without an effective process in place to ensure the reasonableness of supplies expenses, there is the increased risk that funds may not be used to accomplish the necessary project objectives in accordance with Federal and NSF requirements.

*Recommendation 2:*

We recommend that the NSF's Director of the DIAS address and resolve the following Purdue recommendations:

- 1) Work with NSF to resolve the \$28,984 of questioned costs; and
- 2) Strengthen the administrative and management controls and processes for reviewing and approving supplies charged to NSF awards.

*Summary of Awardee Response:*

Purdue disagreed with our findings and recommendations and maintained that adequate evidence was provided. Purdue believes that the use of NSF funds for the laboratory fee was allowable, allocable, and reasonable for carrying out the research proposed and are permitted as part of the University's rebudgeting authority. The lab supplies charged to the award during the closeout process benefitted the students and, therefore, benefitted the award charged and were reasonable and necessary in accordance with Federal cost principles. Per Purdue, the processes for reviewing and approving expenditures were appropriate, and there are no administrative and management control weaknesses. For each of the costs we questioned, Purdue provided a detailed response as to why the institution believes the costs were necessary and reasonable and how they benefitted the awards.

See Appendix A for the complete Purdue response.

*Auditor Comments:*

For these costs that Purdue disagreed with, our conclusions remain unchanged. The additional information provided by Purdue did not change our view, as noted above in finding 2, that these costs should be questioned. The resources listed in the award budget are expected to be provided, or made available, should the proposal be funded. Also, we continue to question the reliability of retroactively identifying general supplies used on a project years after the supplies were purchased. Therefore, the report finding and recommendations remain as stated.

*Finding 3 – Equipment, Materials, and Supplies Unreasonably Purchased near Award Expiration*

We found that equipment, materials, and supply expenses totaling \$25,011 charged to three NSF awards were not necessary or reasonable in accordance with Federal cost principles.

According to 2 CFR 220, Appendix A, Section C, to be allowable for a Federal grant, a cost must be allocable to the Federal award and be necessary and reasonable for the administration and performance of the award. Section C.3 provides that a reasonable cost is one that a “prudent person” would have incurred under similar circumstances.

The *Award and Administration Guide*, Chapter V, Section A.2.c states that a grantee should not purchase items of equipment, computing devices, or restock materials and supplies where there is little or no time left for such items to be utilized in the actual conduct of the research. Therefore, we questioned \$25,011 on three awards for equipment purchased near the award expiration date that did not appear to benefit the awards or that did not appear reasonable or prudent considering the limited time remaining on the awards.

Specifically, we questioned \$11,928 for the purchase of a Linux Work Station, at the end of the career development award, used in developing and examining algorithms. Per Purdue, they were testing the algorithms and applying them to real data. The intensive computation and large volumes of data demanded a new server to complete the job. The installation was completed with the aim of finalizing project research. However, this server was purchased on April 4, 2014, on a 5-year award that expired on May 31, 2014. The equipment was available for only 3 percent of the grant life (57 out of 1,825 days).

Additionally, we questioned \$10,574 charged at the end of the career development award. The award period was initially scheduled to conclude on July 31, 2012, but a no-cost extension was granted to July 31, 2013. In March 2013, NSF notified Purdue that the award would expire on July 31, 2013, and that they may request a 2-month, no-cost extension to extend the award to September 30, 2013. Because the funding was from the FY 2007 Federal appropriation, the unspent funds would expire on September 30, 2013. Also in March 2013, Purdue indicated to NSF that it still had unspent funds. In May 2013, Purdue requested and received approval from NSF for another extension, to September 30, 2013.

- \$8,519 for the purchase of an accessory to a laboratory device. The accessory invoice was dated July 25, 2013, on a 6-year award that expired on September 30, 2013. The equipment was available for only 3 percent of the grant life (67 out of 2,251 days);
- \$2,055 (\$1,352 plus \$703 associated indirect costs) for 40 percent of the purchase of an Apple computer. The computer was received on August 5, 2013, on a 6-year award that expired on September 30, 2013. The computer was available for only 2 percent of the extended grant life (56 out of 2,251 days) and appears to have been purchased to spend down expiring funds.

We also questioned \$2,509 (\$1,845 plus \$664 associated indirect costs) for 90 percent of the purchase of a MacBook Air that was shipped on March 1, 2013, on a 6-year award that expired on April 30, 2013. Per Purdue, the laptop was needed to engage in meetings in preparation for the final annual meeting and to finalize the data compilations for the report. In addition, it was needed to communicate with individuals on the project that were difficult to communicate with over the phone, at all hours and multiple locations. However, based on the purchase date, the general purpose laptop was not necessary for the performance and administration of the NSF award. The computer was available for less than 3 percent of the grant life (60 out of 2,190 days).

Purdue personnel did not adequately review the expenditures charged to the NSF awards, which resulted in unreasonable costs. Without an effective process in place to ensure the reasonableness of equipment, materials, and supplies expenses, there is the increased risk that funds may not be used as required to accomplish the necessary project objectives in accordance with Federal and NSF requirements.

*Recommendation 3:*

We recommend that the NSF's Director of the DIAS address and resolve the following Purdue recommendations:

- 1) Work with NSF to resolve the \$25,011 of questioned costs; and
- 2) Strengthen the administrative and management controls and processes for reviewing and approving equipment, materials and supplies charged to NSF awards.

*Summary of Awardee Response:*

Purdue disagreed with our findings and recommendations and maintained that adequate evidence was provided. Purdue believes that the questioned costs benefitted the awards charged and were reasonable and necessary in accordance with Federal cost principles. Per Purdue, the processes for reviewing and approving expenditures were appropriate and there are no administrative and management control weaknesses. For each of the costs we questioned, Purdue provided a detailed response as to why the institution believes the costs were necessary and reasonable and how they benefitted the awards.

See Appendix A for the complete Purdue response.

*Auditor Comments:*

For these costs that Purdue disagreed with, our conclusions remain unchanged. The additional information provided by Purdue did not change our view that these purchases near the various award expiration dates, as noted above in Finding 3, should be questioned. A grantee should not purchase items of equipment, computing devices, or restock materials and supplies where there is little or no time left for such items to be utilized in the actual conduct of the research. These purchases were available for less than 3 percent of the grant lives. Therefore, the report finding and recommendations remain as stated.

*Finding 4 – Inadequate Documentation*

We found \$849 charged to an award for lodging expenses that did not have adequate documentation in accordance with Federal cost principles.

According to 2 CFR 220, Section A, “the accounting practices of individual colleges and universities must support the accumulation of costs as required by the principles, and must provide for adequate documentation to support costs charged to sponsored agreements.”

Several attendees at a 2-day event charged 4 nights of lodging expenses to the NSF award. Per an email sent to the conference attendees, the award would “cover a third night for international travelers and a fourth if a Saturday stay results in a considerable airfare savings.” We requested documentation to support the savings analysis for the fourth night of lodging, but no documentation was maintained or provided.

Per Purdue, “Further review of all airfare reimbursements was completed. When reimbursing airfare expenses, a cost comparison was not completed at the time of the transaction. Thus, there are no records documenting the savings of a later departure date versus the cost of an additional night of lodging. At this late date, it is not possible to provide a cost comparison of airfare costs for flights booked in 2012.”

Purdue did not provide adequate documentation to support the fourth night of lodging expenses charged to the NSF award and we find the fourth night to be excessive; therefore, the costs are questioned.

Purdue personnel did not adequately document the reason for the additional nights charged to the NSF award, which resulted in this unreasonable charge. Without an effective process in place to ensure the proper

documentation and monitoring of award expenditures, there is the increased risk that funds may not be spent in accordance with Federal requirements.

*Recommendation 4:*

We recommend that the NSF's Director of the DIAS address and resolve the following Purdue recommendations:

- 1) Work with NSF to resolve the \$849 of questioned costs; and
- 2) Strengthen the administrative and management controls and processes for reviewing and approving support for costs charged to NSF awards.

*Summary of Awardee Response:*

Purdue does not agree that costs of \$849 for lodging charges should be disallowed, but did concur that adequate comparative documentation supporting "considerable airfare savings" had not been provided.

See Appendix A for the complete Purdue response.

*Auditor Comments:*

For these costs that Purdue disagreed with, our conclusions remain unchanged. The additional information provided by Purdue did not change our view, as noted above in Finding 4, that these costs should be questioned. Adequate documentation to support the savings for the additional day was not provided. Therefore, the report finding and recommendations remain as stated.



WithumSmith+Brown, PC  
March 13, 2017

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**APPENDICES**

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## SPONSORED PROGRAM SERVICES

February 13, 2017

WithumSmith+Brown, PC  
Two Logan Square, Suite 2001  
Eighteenth and Arch Streets  
Philadelphia, PA 19103-2726

Re: Purdue University Response to the "Purdue University Audit of Incurred Costs for National Science Foundation Awards, for the Period April 1, 2012 to March 31, 2015"

Purdue University (Purdue) has reviewed the draft report entitled "Purdue University Audit of Incurred Costs for National Science Foundation Awards, for the Period April 1, 2012 to March 31, 2015." Purdue wishes to acknowledge the support provided by the National Science Foundation for research conducted at Purdue, which has enabled the advancement of science.

Below are our responses addressing the findings in the report.

**Finding 1 – Unreasonable Travel**

Purdue does not concur with this finding, totaling \$36,437. We believe that adequate evidence of allowability, allocability and reasonableness was provided. We do not believe there was a weakness of our administrative and management controls and processes for reviewing and approving these travel expenditures. These travel costs benefited the award, were consistent and necessary to accomplish the objectives of the revised budget impact statement of the project, and were compliant with NSF policy. Specifically, these travel costs were incurred by the main Principal Investigator (PI) of an NSF SI2 Conceptualization Award that had as its main goal the aim to build a community that would support and be involved in the NSF SI2 institute proposal on the topic of Dynamic Languages for Scalable Data Analytics. Due to the budget limitations, work would be shifted to the main PI who would get a course reduction to spend time on the project.

The annual report submitted and accepted by NSF stated under the project's goals that while the project staff view the impact of a software institute as applying to many disciplines, it was also important to start with a focused effort and involve stake-holder communities that would actively contribute to its success.

**Finding 2 – Unreasonable Expenditures**

Purdue does not agree that these transactions, totaling \$28,984, were not in accordance with Federal Cost Principles. Adequate evidence of allowability, allocability and reasonableness was provided. We do not believe there was a weakness of our administrative and management controls and processes for reviewing and approving these expenditures.

**AWARDEE RESPONSE**

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- \$18,480 for access to an outside laboratory in [REDACTED]: This cost was for the [REDACTED] Facility Fee for the calendar year [REDACTED]. Investigators were required to have a membership in the XENON collaboration and pay the annual facility fee to have access to the national laboratory in Italy and the data being generated by the [REDACTED] experiment. The NSF award statement of work was based on the access to this data. The PI's departmental funds did pay for the calendar year [REDACTED] fees. Purdue feels that the statements made in the Facilities, Equipment and Other Resources document was a statement about access and availability and not a pledge to cost share costs. The membership agreement Purdue entered into with the Italian Lab clearly outlined fees would be charged. The omission in the budget was an oversight by the PI but Purdue believes the use of NSF funds for the calendar year [REDACTED] fee was allowable, allocable and reasonable in carrying out the research proposed in the NSF award's statement of work and permitted as part of the University's rebudgeting authority.
- \$10,504 for lab supplies: This cost was for lab supplies that were used in instructional lab activities performed by students of new laboratory research modules designed and offered for the first time at one of Purdue's regional campuses. The design, offering and assessment of these new research modules –with a goal of improving the first-year laboratory experience – was the stated purpose of the NSF funded award. In reviewing the NSF award in closing it was discovered that the lab manager who was responsible for ordering supplies ordered supplies used on the NSF modules on the department's general fund in error. The error was not discovered until closing out the NSF award which resulted in processing the correcting document late. While the correction was processed after the grant's expiration date, the lab supplies were used in the NSF designed modules during the life of the NSF award. The lab supplies used benefitted the students enrolled in the NSF designed modules and therefore were appropriate to be charged to the NSF award.

**Finding 3 – Equipment, Material, and Supplies Unreasonably Purchased Near Award Expiration**

Purdue does not agree that the equipment, material, and supply expenses, totaling \$25,011, were not necessary or reasonable in accordance with Federal cost principles. We provided adequate evidence of allowability, allocability and reasonableness, and we do not believe there was a weakness of our administrative and management controls and processes for reviewing and approving these expenditures.

- \$11,928 for the purchase of a Linux Work Station: The available servers that had been used on the NSF (Faculty Early Career Development (Career)) award to develop algorithms as proposed in the statement of work were able to meet the needs of the project until late in the project. When testing the algorithms and applying them to real data, it was discovered that the servers could no-longer handle the demands needed to complete the research because of the intensive computing and large volumes genome-wide association studies data being generated. This had been anticipated and the PI had identified a new Linux work station in the budget.

**AWARDEE RESPONSE**

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- \$10,574 for accessory to a laboratory device and an Apple Computer: Work on this Faculty Early Career Development (CAREER) award was delayed which resulted in a no-cost extension to July 31, [REDACTED] and a second request for additional time beyond that period. What the audit report does not disclose is that in the request for the second time extension the PI included in her planned use of some of the unobligated funds to purchase equipment required to complete the experimental work. This included an accessory of the rheometer that was critical for completing the proposed rheological testing program. Due to the Federal appropriation that funded the award, the funds could only be extended to September 30, [REDACTED]. The May 7, [REDACTED] NSF approval email that approved the extension to September 30, [REDACTED] did not disclose any concerns in using some of the unobligated funds to purchase equipment that the auditors questioned in this finding.
- \$2,509 for the purchase of a MacBook Air: Purdue believes the special circumstances of the NSF project requiring coordination of individuals at 8 sites justifies allocating 90% of the purchase of a MacBook Air to wrap-up the publications and complete the data compilations on the project. Two computers were documented in the proposal and approved budget. The charging of 90% of one computer, that was not required until late in the project, met the objectives of the project and is appropriate and reasonable.

**Finding 4 – Inadequate Documentation**

Purdue does not agree that costs of \$849 for lodging charges should be disallowed; however, we concur that we did not have adequate comparative documentation supporting “considerable airfare savings”. We do not believe there was a weakness of our administrative and management controls and processes for reviewing and approving these expenditures.

- \$849 for lodging charges: This charge is for a fourth night of lodging for 8 international participants who were attending an IHUB annual meeting in [REDACTED]. The invitation to the meeting stated a fourth night would be reimbursed to international participants if the stay resulted in a considerable airfare savings. The extra night lodging did allow the 8 participants the opportunity to continue networking on their research since they live all over the world.

Sincerely,

[REDACTED]

Ken L. Sandel  
Senior Director,  
Sponsored Program Services

**OBJECTIVES, SCOPE, AND METHODOLOGY**

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The objective of this audit was to determine whether claimed costs were allowable, allocable, and reasonable with respect to NSF award terms and conditions and applicable Federal financial assistance requirements. Our audit included assessing the allowability, allocability, and reasonableness of costs claimed by Purdue through the Award Cash Management Service for the 3-year period beginning April 1, 2012, through March 31, 2015. The audit was performed in accordance with *Government Auditing Standards* for performance audits.

To aid in determining reasonableness, allowability, and allocability of costs, we obtained from Purdue all award transactions comprising all costs claimed to NSF during the period of April 1, 2012, through March 31, 2015. This provided an audit universe of approximately \$238 million, in approximately 494,000 transactions, across 892 individual NSF awards. For transaction testing, we judgmentally selected 252 transactions totaling \$2.16 million and utilized a data analytics approach to identify potential risk areas. We also performed additional non-transaction based tests as we deemed necessary.

Our work required reliance on computer-processed data obtained from Purdue and NSF. At our request, Purdue provided detailed transaction data for all costs charged to NSF awards during our audit period. We also extracted award data directly from NSF's various data systems. To select transactions for further review, we designed and performed automated tests of Purdue and NSF data to identify areas of risk and conducted detailed reviews of transactions in those areas.

We assessed the reliability of the data provided by Purdue by: 1) comparing costs charged to NSF award accounts within Purdue's accounting records to reported net expenditures, as reflected in Purdue's quarterly financial reports and cash requests submitted to NSF for the corresponding periods; 2) performing general ledger to sub-ledger reconciliations of accounting data; and 3) reviewing and testing the parameters Purdue used to extract transaction data from its accounting records and systems.

Based on our testing, we found Purdue's computer-processed data sufficiently reliable for the purposes of this audit. We did not review or test whether the data contained in, or controls over, NSF's databases were accurate or reliable; however, the independent auditors' report on NSF's financial statements for fiscal years 2014 and 2015 found no reportable instances in which NSF's financial management systems did not substantially comply with applicable requirements.

In assessing the allowability of costs claimed to NSF by Purdue, we also gained an understanding of the internal controls applicable to the scope of this audit through conducting interviews with Purdue, reviewing policies and procedures, and conducting walkthroughs as applicable.

We assessed Purdue's compliance with the University's internal policies and procedures, as well as the following:

- 2 CFR Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*;
- 2 CFR Part 220, *Cost Principles for Educational Institutions* (OMB Circular A-21);
- 2 CFR Part 215, *Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations* (OMB Circular A-110);
- *NSF Proposal and Award Policies and Procedures Guide* (includes the *Grant Proposal Guide* and *Award and Administration Guide*);
- NSF Award Specific Terms and Conditions; and
- NSF Federal Demonstration Partnership Terms and Conditions.

**QUESTIONED COST SUMMARY BY AWARD**

<b>Award ID</b>	<b>ARRA Flag</b>	<b>Amount Questioned</b>	<b>Overhead Questioned</b>	<b>Total Questioned</b>
Finding 1 – Unreasonable Travel				
██████████		\$ 23,660	\$ 12,777	\$ 36,437
<b>Finding 1 Total</b>		<b>23,660</b>	<b>12,777</b>	<b>36,437</b>
Finding 2 – Unreasonable Expenditures				
██████████		12,000	6,480	18,480
██████████		7,244	3,260	10,504
<b>Finding 2 Total</b>		<b>19,244</b>	<b>9,740</b>	<b>28,984</b>
Finding 3 – Equipment, Materials, and Supplies Unreasonably Purchases Near Award Expiration				
██████████	ARRA	11,928	-	11,928
██████████		9,871	703	10,574
██████████		1,845	664	2,509
<b>Finding 3 Total</b>		<b>23,644</b>	<b>1,367</b>	<b>25,011</b>
Finding 4 – Inadequate Documentation				
██████████		849	-	849
<b>Finding 4 Total</b>		<b>\$ 849</b>	<b>\$ -</b>	<b>\$ 849</b>