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

MEMORANDUM

DATE: September 30, 2015

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

Jamie French, Acting Director
Division of Grants and Agreements

FROM: Dr. Brett M. Baker
Assistant Inspector General for Audit

SUBJECT: *Labor Effort Reporting under the Federal Demonstration Partnership Pilot Payroll Certification at Michigan Technological University*,
Report No. 15-1-023

Attached is the final report of our audit of Michigan Technological University's labor effort reporting under the Federal Demonstration Partnership's pilot payroll certification program. The report contains two findings on: 1) internal controls over the support for labor charges to NSF awards, and 2) information technology controls over the protection of payroll information. We have included Michigan Tech's response as an appendix to the final report.

Please coordinate with our office during the six month resolution period, as specified by OMB Circular A-50, to develop a mutually agreeable resolution of the audit findings. Also, 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.

The Offices of Inspector General at NSF and the Department of Health and Human Services are auditing the implementation of pilot payroll certification systems at four universities. Individual reports will be prepared for each audit; then a capstone report will be prepared when all audits are completed to provide overall results and summarize issues identified at all four universities. This report presents the findings at Michigan Tech.

We appreciate the assistance from Michigan Tech officials, staff, and students that was extended to our auditors during this audit. If you have any questions, please contact Louise Nelson, Director of Audit Services, at (303) 844-4689.

Attachment

cc:	France A. Córdova	Richard Buckius
	Ruth David	Michael Van Woert
	Larry Rudolph	Ann Bushmiller
	Karen Tiplady	Christina Sarris
	Allison Lerner	Fae Korsmo
	Alex Wynnyk	Rochelle Ray
	Louise Nelson	Keith Nackerud
		Kaitlin McDonald

Labor Effort Reporting under the Federal Demonstration Partnership's Pilot Payroll Certification at Michigan Technological University

National Science Foundation
Office of Inspector General

09/30/2015
OIG 15-1-023

TM 13-E-1-006

Table of Contents

Introduction.....1

Background.....2

Audit Results.....5

Findings

1. Michigan Tech Needs to Strengthen its Internal Controls to Ensure Labor Charges to NSF Awards are Adequately Supported.....5

2. Michigan Tech Needs to Strengthen its Information Technology Controls to Protect Payroll Information.....8

Conclusion.....8

Recommendations.....9

Summary of Awardee Response and OIG Comments.....10

OIG Contact and Staff Acknowledgements.....11

Appendices

A. Agency's Response to Draft Report.....12

B. Audit Objectives, Scope, and Methodology.....14

C. Sample Design, Methodology, and Results.....16

D. Additional Details on Information Technology General Controls.....21

Introduction

Federal Demonstration Partnership (FDP)

The FDP began in 1986 as an experiment between five Federal agencies (National Science Foundation, National Institutes of Health, Office of Naval Research, Department of Energy, and US Department of Agriculture), the Florida State University System and the University of Miami to test and evaluate a grant mechanism utilizing a standardized and simplified set of terms and conditions across all participating agencies. The result of the test was the establishment of "expanded authorities" throughout the nation, intended to reduce administrative tasks for both the Federal government and research institutions.

One way in which the FDP wanted to reduce administrative tasks involves changing the amount and type of documentation required to support salary and wage charges to Federal awards. Historically, effort reports have been used as the main support for salary and wage charges to federal grants and contracts. Effort reporting is a person-based methodology that allocates each individual's salary to the various projects he/she worked on during the reporting period. FDP proposes a payroll certification system as an alternative to effort reporting. Payroll certification is a project-based methodology that relies on a project's principal investigator to certify that all salaries charged to the project are fair and reasonable in relation to the work performed. FDP asserts the alternative is preferable because:

- effort is difficult to measure;
- effort reports provide limited internal control; and
- effort reporting systems may be expensive to implement and maintain.

Audits of the Pilot Payroll Certification Systems

As agreed to by the Office of Management and Budget (OMB) and the Offices of Inspector General at NSF and the Department of Health and Human Services (HHS), these two OIGs are auditing the implementation of pilot payroll certification systems at four universities: University of California - Irvine; University of California - Riverside; Michigan Technological University (Michigan Tech); and George Mason University. HHS OIG is conducting the audits of the two University of California institutions, while NSF OIG is responsible for the audits at Michigan Tech and George Mason University. Although the audit plan and methodology was consistent across all pilot institutions, the results will differ depending on each institution's implementation of its respective pilot system as well as the nature of the grants and related guidance from the awarding agency (NSF and HHS). A capstone report will be prepared when all audits are completed to provide overall results and summarize issues identified at all four universities.

This report presents the results of the audit work conducted at Michigan Technological University for its NSF awards.

Background

Our audit scope spanned labor charges at Michigan Technological University under both the effort reporting system and the pilot payroll certification process. Therefore, we first developed an understanding of both systems, as implemented by Michigan Tech.

Effort Reporting System

The effort reporting process at Michigan Tech began with entering each employee in the payroll allocation system using an Employee Status Change Form or Request for Account Distribution Change Form showing the salary level and accounts, including awards, to be charged. This initial allocation of effort for each staff person is entered into the Banner payroll allocation system, and the total allocation must equal 100 percent. For hourly employees/students, effort is similarly established using the student requisition/status change form.

The initial distribution of effort may be amended during the semester, or between semesters, as needed, for changes in workload effort or changes in projects/activities. Such changes can be made using an Employee Status Change Form or Request for Account Distribution Change Form, and on the timesheet itself. However, the researchers (frequently graduate students) typically only work on one award at a time, so their effort was not often distributed across multiple awards or activities at the university. In fact, of the 826 employees who charged salaries to NSF during our audit period, 600 (73 percent) allocated full salaries (on a pay period basis) to a single NSF project account rather than to multiple projects.

Each month the after-the-fact effort reports, for graduate, undergraduate, and hourly employees, are signed (for the pay periods in that month). Each semester the after-the-fact effort reports, for salaried employees (faculty and professional staff) are signed (for the pay periods in that semester). The effort reports are signed by either the employee or by someone with first-hand knowledge of the employee's workload. The signature certifies that the labor distribution supporting the award charges "does reasonably reflect the individual's effort during the effort period" and "that the percentage of effort is reasonable". As non-faculty account for most of the labor effort charges to Michigan Tech's NSF awards (85 percent), the vast majority of salary charges were supported by biweekly timesheets. Biweekly timesheets signed by the employee were only required for hourly employees— graduates, undergraduates and all non-faculty staff— and accounted for 85 percent of labor charges.

Pilot System

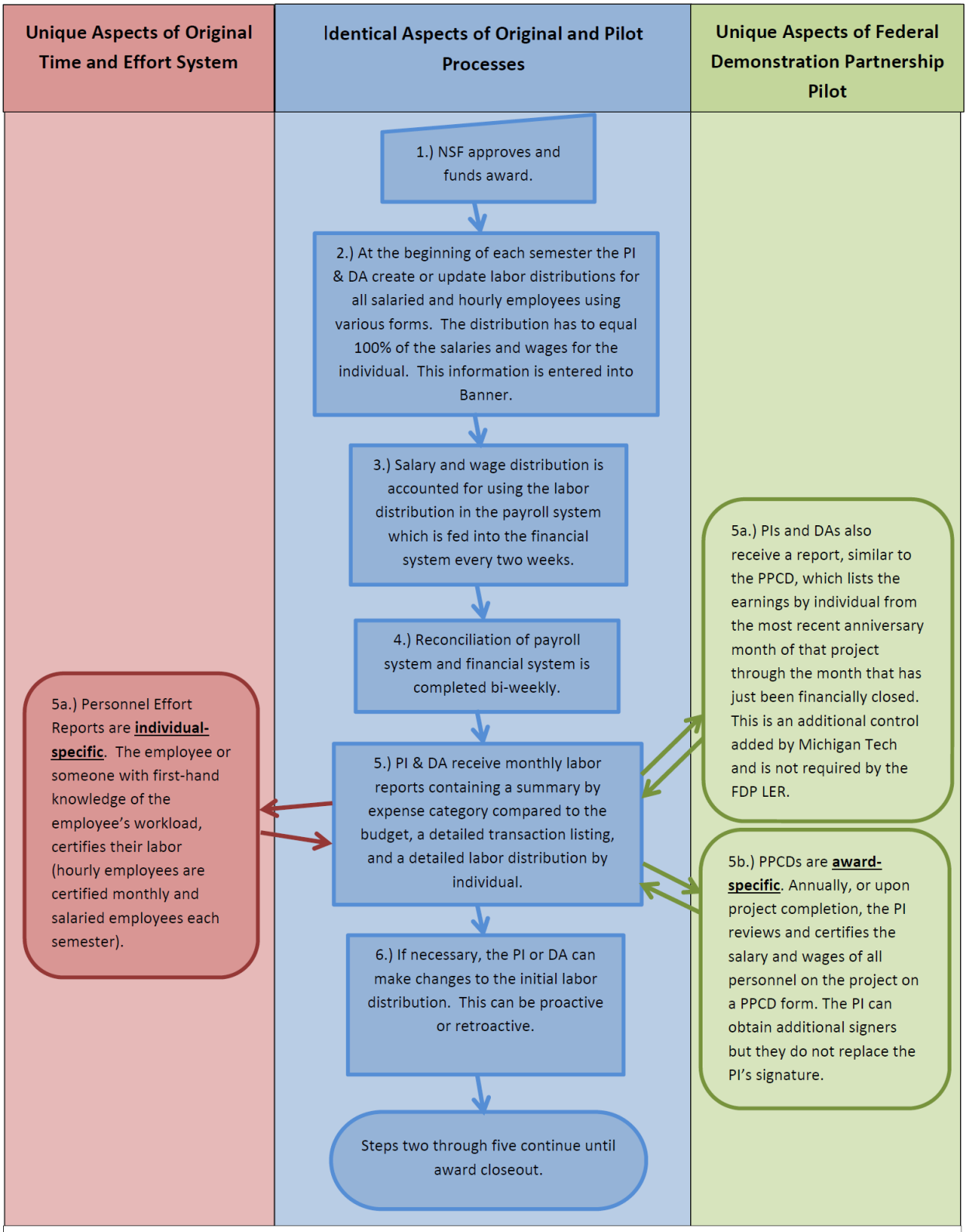
Michigan Tech's process for initiating research salary charges was the same under the pilot as under the prior effort reporting process, as depicted in the following chart. The difference is that Michigan Tech's annual certifications (Project Payroll Certification Document, or PPCDs) included all salaries charged to the respective awards by all employees who worked on the project during the reporting year. The PPCD does include a percent of total compensation for the Principle Investigator's (PI) consideration. The PI is responsible for certifying annually that "all individuals worked on this project," the salary and wage charges were "accurate and reasonable in relation to the work performed, and the federal costing requirements as shown in the

instructions were met" for all employees included on the report. The PI can obtain additional signers (CO-PIs, direct supervisors, and/or accounting/budget analyst specific to the sponsored project) to assist in verifying the accuracy of the salary and wage expense. This certification meets the requirements stated in the FDP pilot as well as OMB Circular A-21 requirements. The certification is to be completed and returned to the Sponsored Programs Accounting within 35 days of distribution. However, the certification does not report effort on other awards the individual worked on during the reporting period, which is a risk.

Comparison of the Previous and Pilot Processes at Michigan Tech

The following flowchart depicts the similarities and differences between the two processes at Michigan Tech. Both the prior effort reporting process and the pilot payroll certification process utilize payroll information maintained in the Banner system.

Comparison of Original Effort Reporting Process to Federal Demonstration Partnership Pilot



NSF – National Science Foundation

PI – Principal Investigator

DA – Department Administrator

PPCD – Project Payroll Certification Document

Audit Results

We performed this audit to determine whether Michigan Tech's payroll certification system provided accountability over federal funds. An area of particular concern was whether the pilot system's shift away from certifying 100 percent of individual employee's effort put federal funds at an increased risk of improper allocation. We based our determination on assessments of Michigan Tech's controls designed to (1) ensure that the university charged allowable labor costs to its NSF awards and (2) secure the data used to support labor charges.

To test the controls over the allowability of labor charges to NSF awards, we selected a sample of 180 payroll transactions for review. Our sample included transactions under both Michigan Tech's payroll certification pilot and the prior effort reporting system. While many of the steps under the pilot were unchanged from the prior system several were different, as discussed in this report. Overall, we found that Michigan Tech's system generally provided accountability over federal funds. However, Michigan Tech did not always comply with its documentation policies for payroll transactions under the effort reporting process as well as the payroll certification pilot.

We also identified weaknesses in the controls over Banner, the system Michigan Tech uses for payroll allocation, under both the effort reporting system and the payroll certification pilot. Specifically, the university could improve its control and enforcement mechanisms over Banner and formalize processes, policies and procedures over the audit capabilities for Banner. As a result, the data retained in the Banner information system to support payroll charges to federal awards may not be secure and could be vulnerable to access by unauthorized users who could modify information.

1. Michigan Tech Needs to Strengthen its Internal Controls to Ensure Labor Charges to NSF Awards are Adequately Supported

Michigan Tech requires the following documentation as support for labor charges to federal awards: Employee Personnel Action Form (EPAF) and/or timesheets for hourly employees/students; EPAF and/or Employee Status Change Form (ESCF) for faculty and professional staff working on federal awards; reallocation forms for after-the-fact changes for all employees; monthly and semester certification of work performed (effort reporting only); and annual certification (PPCD) of payroll expenses charged to each federal award (pilot only). Based on the type of transaction that was tested (initial labor charge or labor reallocation), at least one of these documents was required to support a specific sampled transaction.

To test the effectiveness of Michigan Tech's internal controls over both payroll allocation systems, we selected a sample of 180 transactions,[1] representing $145,152 of costs charged to NSF awards, from a universe of 11,674 transactions, representing $9,552,835 in NSF payroll

[1] See Appendix C for the sample design, methodology and results.

charges. The transaction universe included 68 transactions under the prior effort reporting process and 112 transactions under the payroll certification pilot.

We found problems (which are detailed below) in 8 of the 180 sample transactions we tested, totaling $8,757.

If the inaccuracies and lack of adequate supporting documentation found in the sampled transactions occurred with the same frequency across the population, we project that Michigan Tech lacked adequate supporting documentation for $145,152 out of the $9,552,835 salary costs claimed against NSF awards during the audit period. Fringe benefits and facilities and administrative (F&A) costs associated with the projected costs are $[redacted] and $[redacted] respectively. Our estimate was based on a universe of 11,674 total payroll transactions projecting the identified errors at 90 percent confidence.[2] The majority of the problematic transactions were the result of Michigan Tech failing to follow its own internal policies and procedures.

The following sections describe the documentation issues identified in our audit.

Timeliness of Certifications

Our sample included 68 transactions under the prior effort reporting system. We found that 5 of the 68 transactions we tested under the prior effort reporting system at Michigan Tech had effort reports which were submitted late and one did not have a signed effort report. Michigan Tech effort reports were normally due three weeks after the effort reports were generated. The five effort reports were between 4 and 246 days late. The university stated that it generated and disseminated approximately 7,000 effort certifications each year, and that late certifications occurred, in part, because of the large number of annual certifications.

The sixth transaction did not have a signed effort report. OMB A-21 requires after-the-fact certifications of effort on sponsored awards and so does Michigan Tech policy. Under the prior effort reporting system at Michigan Tech, effort reports are usually used for this requirement. Michigan Tech also has reallocation forms. These forms are used to document the movement of money related to a sponsored award. The reallocation forms are signed and meet the requirement of an after-the-fact certification of effort. Michigan Tech was able to provide a reallocation of funds form for 9% of the funds related to this one transaction. However, the remaining 91% of the funds charged to NSF did not have an effort report or other form of after-the-fact certification of the effort, such as a reallocation of funds form.

The remaining 112 sampled transactions were under the payroll certification pilot. There were no late or unsigned PPCDs under the payroll pilot.

Michigan Tech needs to strengthen its internal controls over its payroll allocation and certification processes to ensure labor charges to NSF awards are adequately supported, as required by federal regulation, NSF, and university policy.

[2] See Appendix C for complete details of the sample design, methodology, and results.

Policies and Procedures

Our sample included 112 transactions under the payroll certification. We found the following 2 problems related to changing salary and wage distributions in the 112 transactions tested under the payroll certification pilot.

First, Michigan Tech did not follow its policies for changing the salary and wage distributions for two employees. The university's policy provides three options for changing the initial salary and wage distributions for employees. Changing of the initial salary and wage distribution is needed when an employee, who was originally hired to work on one project, switches and works on a different project.

In the first transaction, Michigan Tech relied on emails and hand written notes to change the initial salary and wage distribution. Michigan Tech policy required these changes be documented on a biweekly timesheet or on the original hiring documents because the issue was identified before the submission of the biweekly payroll cycle. Michigan Tech stated that emails indicated that a correction needed to be made quickly. If these two options could not be completed before the submission of the biweekly payroll cycle, Michigan Tech policy also allows for a reallocation after the biweekly payroll cycle. However, Michigan Tech did not follow any of these three procedures to change the initial salary and wage distributions.

Second, Michigan Tech processed a second transaction based on hand written notes on a human resources document. University policy required the use of a reallocation of funds form since the change to the initial salary and wage distribution was made after the submission of the biweekly payroll cycle. When personnel involved in the payroll certification process do not follow university procedures, it raised concerns about the institution's internal controls.

The remaining 68 sampled transactions were under the prior effort reporting system. There were no issues with adjusting the initial salary and wage distributions under the prior system.

As stated previously, a primary concern of this audit was to determine whether the fact the pilot system does not require certifying 100 percent of each employee's effort increased the risk of improper allocations of payroll. We found that full allocations remain recorded and available within Michigan Tech's systems. Nonetheless, when PIs certify the salaries charged to their awards, they do not have records of full payroll allocations for employees who worked on their projects. Visibility over full payroll allocations provides greater assurance that project costs are accurate. Therefore, making full allocations available to PIs would be useful in assuring payroll charges to federal awards are accurate. Additionally, accounting for full allocations of employees' time could be an important control to help ensure that overcharges and inaccurate charges do not occur.

Based on the number and types of errors we identified from the transaction testing, Michigan Tech needs to strengthen its internal controls over its payroll allocation and certification processes to ensure labor charges to NSF awards are adequately supported, as required by federal regulation, NSF, and university policy.

2. Michigan Tech Needs to Strengthen its Information Technology Controls to Protect Payroll Information

Both the prior effort reporting process and the pilot payroll certification process utilize payroll information maintained in the Banner system. Auditors identified the following areas in which IT controls needed to be strengthened:

- [redacted]. National Institute of Standards and Technology Guidance (NIST) recommends organizations [redacted] Michigan Tech can help prevent abuse of the system and its data.

- [redacted]. [redacted] NIST guidelines recommend employees' [redacted].

- A general vulnerability in Banner was identified that could potentially allow unauthorized access to the entire system. We reported this issue to Michigan Tech immediately, and it is working to address this vulnerability.

- Michigan Tech did not have formalized processes, policies or procedures over the audit capabilities established for Banner, as recommended by NIST. In the absence of formalized system auditing, Michigan Tech cannot ensure that unauthorized system changes or system access is identified, and timely remediation action is executed.

As a result of these IT control weaknesses, the data in the Banner information system used to support payroll charges to Federal awards may not be secure, and could put the reliability of information used as the basis for labor charges to federal awards at risk. These system weaknesses were identified under the prior effort reporting process and still existed during the pilot process. Therefore, the reliability of the payroll and effort reporting cost data used to support Michigan Tech labor charges is at risk until these control weaknesses are addressed.

Conclusion

Inappropriately changed salary and wage distributions under the pilot system was the main issue identified in the transactions sampled. Late effort certifications was the most prevalent issue identified under the prior effort reporting system. When effort reports are certified after work has been completed, there is a higher likelihood that labor will be charged incorrectly. In

addition, when internal controls are not adhered to it raises questions about the control environment. We concluded that these problems occurred because Michigan Tech did not follow its internal policies and procedures, and were not the result of inadequate controls over the pilot system. When reviewing the IT controls over the Banner information system, we identified many [redacted] weaknesses that occurred because Michigan Tech failed to establish and enforce adequate controls. Given that the data for both the effort reporting and pilot processes was housed in Banner, these IT weaknesses were not attributable to the design of either the effort report or pilot certification systems but to the Banner system as a whole.

Both the pilot system and the prior effort system rely on the people and systems involved and on the institution to have adequate internal controls to ensure that its policies and procedures are followed. If institutions use the pilot, they need to ensure that they have strong internal controls to ensure the payroll charges are adequately supported. If schools are going to certify the documentation less frequently, they have to be more diligent in ensuring that control procedures are communicated and adhered to on a consistent basis. Additionally, maintaining the full allocation of payroll to each individual's activities is important to ultimately ensure adequate support for Federal labor charges. Having direct visibility of each employee's full payroll allocation, including percentage allocations assigned to other awards or projects, is important to a PI to ensure the percentage assigned to his or her project is reasonable. Accounting for full allocations of employees' time could be an important control to help ensure that overcharges and inaccurate charges do not occur. There are challenges with any payroll allocation system, and strong internal controls are the key to ensuring taxpayer funds are appropriately charged and adequately protected from misuse and abuse.

Recommendations

We recommend that NSF's Director of the Division of Institutional and Award Support (DIAS) direct Michigan Technological University to:

1. Enforce its written policies for the pilot payroll certification system. Specifically, Michigan Tech needs to ensure that processes for changing the salary and wage distributions of employees are adhered to.

2. Enhance internal controls over information technology as follows:
    a. Review current access privileges for finance and human resource personnel and revise current access permissions based on least privilege;
    b. Review the current termination notification process an implement necessary procedures to ensure timely removal of user access rights; and
    c. Review [redacted]
    d. We recommend Michigan Tech formalize and implement policies and procedures for Banner auditing functions and processes.

Summary of Awardee Response and OIG Comments

Recommendation 1 Response and OIG Comments

Michigan Tech concurs with the recommendations and notes that in several instances they have implemented changes prior to receiving these recommendations. It acknowledges following the three existing procedures to change salary and wage distribution will strengthen their internal controls over payroll allocations, and they will continue to provide communication and education to the central and department administrators responsible for the changes to the initial salary and wage allocations. It also notes that the Payroll Certification pilot has strengthened its internal controls over its certification process.

Michigan Tech's response also states that the audit report concludes that Michigan Tech has adequate controls over the pilot system. The audit report actually states, "Overall, we found that Michigan Tech's system generally provided accountability over federal funds." The audit report noted specific concerns with the Payroll Certification pilot itself. Specifically, the audit report notes that an area of particular concern with the pilot was whether the pilot system's shift away from certifying 100 percent of individual employee's effort put federal funds at an increased risk of improper allocation.

Michigan Tech states that the percent of total compensation for each individual employee is included on the PPCD, and that the PI had firsthand knowledge for the nature and scope of the work performed. The audit report notes that the PPCD does not report effort on other awards the individual worked on during the reporting period, which is a risk. When PIs certify the salaries charged to their awards, they do not have records of full payroll allocations for employees who worked on their projects. Visibility over full payroll allocations provides greater assurance that project costs are accurate. Therefore, making full allocations available to PIs would be useful in assuring payroll charges to federal awards are accurate. Additionally, accounting for full allocations of employees' time could be an important control to help ensure that overcharges and inaccurate charges do not occur.

Recommendation 2 Response and OIG Comments

Michigan Tech concurs with the recommendations and notes that in several instances they have implemented changes prior to receiving these recommendations. Michigan Tech concurs that there are areas in which IT controls need to be strengthened. Michigan Tech also noted that they have implemented newly defined roles and job responsibilities regarding user access in Banner; are reviewing their nightly automated termination process to ensure timely removal of access; the [redacted] was reviewed and the vulnerability has been addressed; they are in the process of identifying a Security Incident and Event Management tool to help with the maintenance, monitoring, and analysis of audit logs; implemented audit and logging controls on HR banner tables; and is formalizing and implementing policies and procedures related to the Banner auditing functions and processes.

OIG Contact and Staff Acknowledgements

Louise Nelson, Director, Audit Services
303-844-4689 or lnelson@nsf.gov

In addition to Ms. Nelson, Daniel Buchtel, Keith Nackerud, Kenneth Lish, Catherine Walters, Brittany Moon, Jeremy Hall, and Jennifer Miller made key contributions to this report.

Appendix A: Auditee Response to Draft Report

Michigan Tech
Michigan Technological University

Financial Services and Operations
Third Floor Lakeshore Center
1400 Townsend Drive
Houghton, MI, 49931-1295
906-487-2642 • Fax 906-487-2521
www.mtu.edu/fso

September 25, 2015

Re: Michigan Technological University Response to Draft Audit Report

Dear Ms. Nelson:

This response to the National Science Foundation (NSF) draft report, "Labor Effort Reporting under the Federal Demonstration Partnership's (FDP's) Pilot Payroll Certification at Michigan Technological University" is submitted on behalf of Michigan Technological University (Michigan Tech).

Recommendation 1

As one of the four FDP member Universities implementing the Payroll Certification pilot, Michigan Tech has met the basic elements described in the pilot proposal and we are pleased the draft audit report concludes that Michigan Tech has adequate controls over the pilot system. The audit report noted a concern that the pilot certifications do not require certifying 100% of each employee's effort. We note the percent of total compensation received for each individual employee during the project year is included on the Project Payroll Certification Document (PPCD). The PI has firsthand knowledge of the nature and scope of work to determine if the salary and wages charged were reasonable in relation to the work performed for each budget year within the project. If the PI is not the supervisor of the employee he or she may not be aware of the nature or scopes of other activities of the individual. Knowledge of percentage allocations assigned to other individual projects may not be informative to the PI when certifying the work performed on his or her project is reasonable.

The draft audit report indicates that Michigan Tech's effort reporting system had effort reports submitted late and one not returned while the Payroll Certification pilot had 100% of the certifications returned by the due date. Michigan Tech feels the implementation of the Payroll Certification pilot has strengthened its internal controls over its certification processes ensuring labor charges to NSF awards are adequately supported, as required by federal regulation, NSF, and university policy.

Michigan Tech acknowledges following the three existing procedures to change the initial salary and wage distribution will strengthen our internal controls over payroll allocations. Michigan Tech will continue to provide communication and education to the central and department administrators responsible for the changes to the initial salary and wage allocations.

Recommendation 2

Michigan Tech centralized University Information Technology (IT) support and services in 2011. As part of the centralization process, an assessment of the University's IT control environment was conducted to identify potential security risks and areas of improvement.

www.mtu.edu
We prepare students to create the future.
Michigan Technological University is an equal opportunity educational institution/equal opportunity employer, which includes providing equal opportunity for protected veterans and individuals with disabilities.

Since 2011, Michigan Tech has made significant progress in strengthening its IT control environment. An IT Governance Committee was created and charged with the responsibility to review, make recommendations, and participate in the formulation of IT policies and budget priorities. A change management methodology has been adopted and a process is in place to identify, document, and authorize changes to the IT environment. A new identity and access management system has been implemented to help manage the account life cycle including granting and revoking access to University systems as well as password enforcement.

While progress has been made in strengthening the IT control environment, Michigan Tech concurs with the NSF OIG assessment that there are areas in which IT controls need to be strengthened.

In regards to the NSF OIG recommendations,

- As part of a Banner HR re-engineering project, Michigan Tech determined that certain areas [redacted] analysis was conducted to determine appropriate [redacted] permissions based upon least privilege. The implementation of the newly defined roles and job responsibilities began in September 2015.
- Michigan Tech has a nightly automated [redacted] process. The process is being reviewed to determine what changes can be made to ensure timely [redacted]
- [redacted] was reviewed and vulnerability has been addressed.

Michigan Tech IT is in the process of identifying a Security Incident and Event Management (SIEM) tool to help with the maintenance, monitoring and analysis of audit logs. Michigan Tech has also implemented auditing and logging controls on critical HR banner tables to mitigate the risk of unauthorized changes and access. Michigan Tech will continue its efforts in formalizing and implementing policies and procedures related to the Banner auditing functions and processes.

Summary

Michigan Tech appreciates the opportunity to provide feedback on the draft report. We note that the draft audit report concludes that Michigan Tech has adequate controls under the pilot payroll certification system to insure that all salaries charged to a project are fair and reasonable in relation to the work performed. We concur with the recommendations from the draft report and note that in several instances we have implemented changes prior to receiving these recommendations.

Sincerely,

[redacted]

Executive Director of Financial Services & Operations
Treasurer of the Board of Trustees

Appendix B: Audit Objective, Scope and Methodology

The objective of the audit was to determine whether Michigan Technological University's (Michigan Tech) prior effort reporting and current pilot payroll certification processes had adequate controls to (1) ensure that the University charged allowable labor costs to its NSF awards and (2) secure the data used to support labor charges.

The payroll certification pilot started at Michigan Tech in July 2011. The audit was announced on March 11, 2013. The audit scope encompassed the period of January 2, 2010 through March 31, 2013. We selected 180 of 11,674 transactions to test, totaling $145,152 of the $9,552,835 sample universe. See Appendix C for the sampling design, methodology and results.

We gained an understanding of the payroll certification processes (both the pilot and the former processes used at Michigan Tech); payroll processes; how these processes relate to both the labor costs in Michigan Tech's general ledger, and how labor costs are charged to Federally sponsored awards. We also performed an on-site visit to obtain an understanding of the processes, procedures, and internal controls related to the scope and objectives of the audit. Our focus was on the labor certification process, labor effort recording and reporting, and accountability for labor costs charged to NSF awards.

In order to ensure that we had a comprehensive universe of all payroll related transactions charged to Federal awards by Michigan Tech, we obtained reconciliations between the general ledger (GL) and the payroll subsidiary ledger; between the payroll subsidiary ledger and the payroll certification records; and also between the payroll sub ledger, payroll certification records and the GL; and, between the GL and the federal financial reports (FFR). We requested and analyzed all pertinent GL, payroll subsidiary ledger, and labor effort details (timesheets, appointment letters) and performed data analytics to target payroll-related transactions for detailed test work.

We utilized data analytics to establish business rules that were utilized for risk assessment of the data and also to formulate strata. Under the data analytics process, 100% of all labor-related transactions were subject to review utilizing the business rules developed to test the transactions.

We relied on the work of an HHS OIG statistical specialist, who used the HHS OIG Office of Audit Sampling Policies and Procedures and RATSTAT to select a simple random stratified variable sample for testing. We also relied on the work of an HHS OIG IT auditor to conduct the IT portion of the audit.

For each employee for which a transaction was selected for review, we obtained and reviewed supporting documentation to determine whether labor costs were actually incurred, benefited NSF awards, and were accurately and timely recorded and charged to NSF awards. We also conducted on-site interviews of selected employees to obtain corroborating evidence of the documentation.

We tested the 180 sample transactions for allowability against the following criteria:

- Generally Accepted Accounting Principles (GAAP)
- National Institute of Standards and Technology guidance on information technology
- OMB Circular A-21, Cost Principles for Educational Institutions
- NSF Grant Policy Manual (GPM)
- NSF Grant Policy Guidance (GPG)
- Individual award agreements
- Michigan Tech Policies and Procedures

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.

We held an exit conference with Michigan Tech officials on September 2, 2015.

Appendix C: Sample Design, Methodology, and Results

We used stratified sampling to select a sample of 180 payroll transactions for testing during the audit. The sample design, methodology, and results are as follows:

Sample Design and Methodology

Population: The population contained all salary and wage transactions charged by Michigan Technological University (Michigan Tech) to its NSF awards for the period January 2, 2010, through March 31, 2013.

Sampling Frame: Michigan Tech provided excel files of Michigan Tech's accounting system general ledger and payroll sub-ledger for the period January 2, 2010, through March 31, 2013. From these ledgers, we identified 13,942 individual payroll transactions (transaction) records totaling $8,902,323. The NSF OIG Data Analytics Team (DAT) imported the original excel files into its ACL tool (the ACL Project). After data analytics (see Sample Design, below), we removed all transactions equal to or less than $100. This included the removal of all negative dollar transactions. This resulted in a sample frame consisting of 11,674 transactions totaling $9,552,835.

Sample Unit and Design: The sample unit was an individual payroll transaction. All transactions within the sampling frame underwent data analytics tests covering four areas of high risk: charges to expired awards, excess salary charges, high risk adjustments, and administrative salaries (e.g., indirect costs) charged directly to awards. Each area of high risk comprised a stratum for statistical sampling purposes. All transactions that did not fall within one of these 4 strata placed in Strata 5 entitled "All Other Transactions." Details of the steps used in the development of the five strata and rules followed in assigning transactions were as follows:

Stratum #1 - Charges to Expired Awards

The DAT created a business rule to identify transactions either posted or earned in a pay period subsequent to the expiration date of the award. [redacted]

Stratum #2 - Excess Salary

The DAT created five separate business rules to test for excess salary charges: labor charges that cumulatively exceed NSFs 2 month limitation for senior personnel, high risk payroll transactions, employee charges that exceed 100% in a labor distribution, payroll transactions posted to awards with no budgeted salary and wages, and employee charges that exceeded the maximum number of hours allowed for the pay cycle. Any transaction containing one or more of

the attributes tested in the business rules detailed below fell into this stratum.

2-month Salary Limit: The DAT conducted the 2 month salary limit for senior NSF project personnel test as follows:

- Requested appointment detail which included annual salary rates for the employees identified by Michigan Tech to be senior personnel. Michigan Tech provided this information.

- Used the appointment detail to calculate the "2 Month Limit Amount" for each employee. The DAT developed a conservative decision rule wherein the rate used to calculate the 2 Month Limit Amount was the employee's appointment year highest base salary amount.

- Sorted all senior personnel payroll charges [redacted] The appointment year for all senior personnel is based on the University's academic year.

- [redacted]

High Risk Pay Transactions: The second business rule identifies payroll transactions deemed high risk based on data analyst judgment and knowledge of the data, outliers present in the data, prior audit experience, and review of Michigan Tech policy and procedures. To aid in identifying potential high risk excess salary charges, the DAT first summarized (totaled) the transactions by (a) Account code; [redacted]. Any transaction that was posted to the following high risk classifications fell into this stratum.

Labor Distribution Exceeds 100%: The third business rule identifies payroll transactions in which the cumulative labor distribution to a particular index for a specific job event exceeds 100%. [redacted] Transactions that either individually or cumulatively exceeded 100% for a labor distribution fell into this stratum. This test was limited to salaried personnel.

Labor Charges to Awards with no Budgeted Salary & Wages: The fourth business rule identifies charges to awards with no budgeted salary. [redacted] Any transaction to an award that had no budgeted salary and wages fell into this stratum.

Labor Distribution Hours Exceeds Pay Cycle Maximum: The last business rule identifies transactions in which the cumulative number of hours worked exceeded the maximum number of hours allowed for the pay cycle. Michigan Tech only has a bi-weekly pay cycle, thus the number

of hours worked for any employee should never exceed 80 hours. [redacted] Transactions that either individually or cumulatively exceeded the 80 hour bi-weekly pay period maximum number of hours fell into this stratum.

Stratum #3 - High Risk Adjustments

The DAT created a business rule to identify high risk adjustment transactions which we defined using auditor and data analyst judgment after gaining an understanding of the types of adjustments within the Michigan Tech data, reviewing Michigan Tech policies and procedures, and reviewing patterns within the data.

Stratum #4 - Administrative Salaries

The DAT created a business rule to identify transactions that appear to be administrative in nature and as such should not be directly charged to sponsored projects. The criteria used to define administrative type salaries included NSF grant policy guidance and OMB circulars, as well as auditor experience and data analyst judgment and knowledge of Michigan Tech's payroll data. The DAT summarized the transactions by (a) Account code; (b) Position Number/Job Title; and (c) NSF Budget Sub-Category.

Stratum #5 - All Other Transactions

Any salary and wage transactions that did not fall within any of the other stratum were placed within Stratum 5.

The application of criteria to the various stratums resulted in the following sampling frame:

Michigan Technological University			
Stratum	**Record Count**	**Dollar Value**	**Number of Sample Items Selected**
1 - Charges to Expired Awards	68	52,220	30
2 - Excess Salary	2,080	2,972,562	30
3 - High Risk Adjustments	173	98,644	30
4 - Admin Salaries	1,518	1,395,842	30
5 - All Other Transactions	7,835	5,033,566	60
TOTALS	**11,674**	**$9,552,835**	**180**

Method for Selecting Sample Units: We arranged the transactions within each stratum in date order pursuant to the general ledger posting date as provided by Michigan Tech in its data. We then consecutively numbered the transactions within each stratum. After generating random numbers for each stratum using the U.S. Health and Human Services, Office of Inspector General, Office of Audit Services (HHS OIG/OAS) statistical software, we selected the corresponding frame items.

Sample Results

Estimation Methodology: HHS OIG/OAS used the RAT-STATS variable appraisal program for stratified samples to estimate the amount of unallowable salary and wage costs claimed by Michigan Tech against NSF awards for the audit period.

In addition, we provided the 8 sample transactions that were determined to be in error to Michigan Tech staff and asked them to provide us with the (1) Fringe Benefit and (2) Facilities & Administrative (F&A) costs associated with those transactions. HHS OIG then estimated the Fringe Benefits and F&A costs associated with the original sample transactions.

Results: Payroll Transactions (Salary and Wage Costs)

Stratum	Frame Size	Value of Frame	Sample Size	Value of Sample	Number of Transactions in Error	Value of Transactions in Error
1	68	$52,220	30	$23,196	2	$2,290.26
2	2,080	2,972,562	30	36,851	4	5,023.19
3	173	98,644	30	17,025	1	722.67
4	1,518	1,395,842	30	31,542	0	0
5	7,835	5,033,566	60	36,535	1	721.13
Total	**11,674**	**$9,552,835**	**180**	**$145,152**	**8**	**$8,757.25**

Results: Fringe Benefits

Stratum	Frame Size	Sample Size	Number of Transactions in Error	Value of Transactions in Error
1	68	30	1	$50.72
2	2,080	30	4	1,177.25
3	173	30	1	46.97
4	1,518	30	0	0
5	7,835	60	1	54.08
Total	**11,674**	**180**	**7**	**$1,329.02**

Results: F&A COSTS

Stratum	Frame Size	Sample Size	Number of Transactions in Error	Value of Transactions in Error
1	68	30	2	$1,061.63

2	2,080	30	4	3,158.04
3	173	30	1	200.11
4	1,518	30	0	0
5	7,835	60	1	434.12
Total	**11,674**	**180**	**8**	**$4,853.90**

Total Estimated Value[3] of Salary and Associated Costs for Transactions in Error

Category	Point Estimate	Lower Limit	Upper Limit
Salaries/Wages	[redacted]	[redacted]	[redacted]
Fringe Benefits	[redacted]	[redacted]	[redacted]
F&A Costs	[redacted]	[redacted]	[redacted]
Totals	$820,079	$151,349	$1,557,068

[3] HHS OIG calculated the Estimates and Limits for a 90-Percent Confidence Interval.

Appendix D: Additional Details on Information Technology General Controls

[redacted]

[redacted]

Appdetective was used to assess common security vulnerabilities found on Oracle databases. The Appdetective database security assessment identified one high-risk vulnerability. [redacted]

Michigan Tech did not have formalized processes, policies or procedures over the audit capabilities established for Banner. NIST Special Publication 800-53, Revision 3, "Recommended Security Controls for Federal Information Systems and Organizations," AU-1, recommends the organization an audit and accountability policy that addresses purpose, scope, roles, responsibilities, management commitment, coordination among organizational entities, and compliance. In addition, NIST recommends the organization develop and documents procedures to facilitate the implementation of the audit and accountability policy and associated audit and accountability controls.