

Audit of Payroll Distribution System

**California Institute of Technology
Pasadena, California**

**National Science Foundation
Office of Inspector General**

**March 30, 2007
OIG 07-01-013**





EXECUTIVE SUMMARY

This audit report provides the results of our review of the Payroll Distribution Confirmation system used by the California Institute of Technology (Caltech) to validate salaries and wages charged to National Science Foundation (NSF) grants. In fiscal year 2005, Caltech had total Federal research and development grant expenditures of [REDACTED] million, of which \$74 million was directly funded by NSF. Of this amount, over \$19 million was for labor costs directly charged to NSF grants.

Our review disclosed that Caltech generally has a well established and sound Federal grants management enterprise program. It has updated its Federal grants management policies and procedures in recent years, has provided appropriate grants management training to campus personnel, and has established an Institute Compliance Program to provide an operational framework to assure adherence with Federal and campus grants management policies and procedures. Review of 32 sampled employees disclosed that Caltech's Payroll Distribution Confirmation (PDC) reports generally support the FY 2005 salary costs of \$1.6 million directly charged to NSF grants.

However, Caltech needs to enhance its PDC system to provide for accurate reporting of voluntary committed labor effort devoted by faculty members on Federal projects. Voluntary committed labor effort is defined as cost sharing that Principal Investigators (PI) have willingly agreed to provide and have formally identified in their grant proposals although the sponsoring agency has not required any mandatory cost sharing of project costs. Our review of the 32 sampled employees disclosed that 3 of the 5 faculty members in the sample had explicitly pledged in their grant proposals to spend from 1 to 20 percent of their time on 5 Federal awards, but did not report any of this voluntary contributed effort in their PDC reports. The FY 2005 salary costs associated with such unreported faculty effort is valued at approximately \$100,000, or about 20 percent of the annual compensation received by these individuals.

Without accurate reporting of voluntary committed labor effort, the Federal Government has less assurance that PIs actually devote the level of effort promised in their grant proposals to accomplish project objectives. In addition, the salary costs associated with such unreported faculty effort does not properly get included in Caltech's organized research base, thereby resulting in greater indirect costs paid by the Federal Government. Given that Caltech has 286 professorial faculty members that may have similarly not reported their voluntary committed labor effort, the monetary impact could be potentially significant.

This weakness occurred because Caltech's payroll distribution system does not track and report actual employee activity/effort devoted to sponsored projects. Rather, the system is only required to validate salaries and wages directly charged to Federal grants. As such, Caltech has not established clear guidance and procedures to ensure that PIs properly identify and track effort voluntarily pledged as cost sharing in its Federal grant proposals.

Furthermore, Caltech needs to improve the timeliness of PDC report distribution and certification. Of the 63 PDC reports reviewed for the 32 sampled employees, all of the reports were certified late beyond the 150-day timeframe established by Caltech policy. Specifically, in FY 2005, (a) Caltech published and distributed all reports an average of 12.5 days beyond the established 120-day timeframe and (b) PIs certified 25 percent of the reports from 1 to 47 days beyond the 30-day established turnaround time. Without timely certification, NSF has less assurance that such certifications are reliable because PIs must remember as far back as 11 months to confirm employee activity on sponsored projects.

Recommendations were made to improve Caltech procedures to more accurately report voluntarily contributed PI effort on sponsored projects and to provide timely certification of PDC reports. Specifically, Caltech needs to establish clear guidance and procedures for PDC tracking and reporting of cost-shared effort that faculty members explicitly pledge in Federal grant proposals. Furthermore, Caltech needs to develop a management plan to address its challenges for achieving timely PDC reporting.

A draft audit report requesting comments on the findings and recommendations was issued to Caltech. In general, the University agreed with the audit findings and recommendations but stated that Caltech already had adequate management processes in place to address the issue of timely PDC reports. Specifically, Caltech believes that it can utilize its current established processes to improve the timeliness of PDC reporting.

Caltech's responses, once implemented, should address our audit recommendations. NSF should work with the cognizant audit agency and/or Caltech to ensure the University develops an acceptable corrective action plan to resolve each audit recommendation. We have summarized Caltech's responses and provided our comments after each recommendation in the report. Also, Caltech's responses to the draft report in its entirety are included as Appendix B.

Table of Contents

	Page
EXECUTIVE SUMMARY	i
INTRODUCTION	1
Background	1
Objectives, Scope, and Methodology	2
FINDINGS AND RECOMMENDATIONS	
1. Payroll Distribution System Does Not Accurately Report Faculty Effort on Federal Grants	6
2. Distribution and Certification of Effort Reports Need To Be More Timely	19
3. Other Audit Matters	24
APPENDICES	
Appendix A: Schedule of FY 2005 Questioned Salaries and Wages	27
Appendix B: Caltech Response to Draft Audit Report	28

ACRONYMS

DOE	Department of Energy
NSF	National Science Foundation
OIG	NSF Office of Inspector General
OMB	U. S. Office of Management and Budget
ONR	Office of Naval Research
Caltech	California Institute of Technology
PDC	Caltech's Payroll Distribution Confirmation System

INTRODUCTION

Background

Approximately one third of the National Science Foundation (NSF) award funds are provided for salary and wages, amounting to about \$1.3 billion annually at universities. Also, in recent years, there have been several civil settlements involving overcharges of labor costs to Federal grants, amounting to millions of dollars at several major universities, including some funded by NSF. Because of these legal actions and the material amounts of labor costs paid from NSF awards, the Office of Inspector General (OIG) is undertaking a series of reviews of the labor effort distribution systems at NSF's top-funded universities in order to assess the adequacy of internal controls to ensure salary and wage costs claimed on NSF grants are properly managed, accounted for, and monitored. This audit, involving the California Institute of Technology (Caltech), is the first in the series of our planned reviews of such labor effort distribution systems.

Caltech, founded in 1891, is a small independent, privately funded university devoted to research and teaching in science and engineering disciplines. The University is located in Pasadena, California and has approximately 300 regular faculty members, 600 post-doctoral researchers, 1300 graduate students, and 900 undergraduate students. Although small in size, it is ranked in the top 10 universities worldwide and has had 31 Nobel laureates. The academic departments at Caltech are divided into six divisions, each of which offers several degree programs and a number of interdisciplinary programs. Students are highly encouraged to participate in research, thus Caltech has one of the highest percentages of alumni among all major universities who go on to receive a Ph.D.

Federal Government grant and contract funding constitute a major source of Caltech's annual revenues. Specifically, the University operates and manages the Jet Propulsion Laboratory for the U.S. National Aeronautics and Space Administration; which has an annual budget of approximately [REDACTED] and employed over [REDACTED] people in 2005. In addition, Caltech spent over [REDACTED] million of Federal grant funds in FY 2005; which included over \$74 million of direct costs funded by NSF for research and educational related projects. Approximately [REDACTED] million of the \$74 million of NSF grant costs were for salaries and wages for faculty, post-doctoral researchers, staff, graduate students, and other employees who worked on research activities to carry out Federal award objectives. As a research-intensive academic institution, Caltech faculty members are awarded 12-month calendar year appointments and are generally required only to teach one class during each of the 3 academic sessions. Some faculty members only teach 2 of the 3 academic sessions; with no Caltech classes taught during the summer months.

Caltech's management and oversight of Federal grant programs is shared between the Office of Sponsored Research (OSR) and the Office of Post Award Administration.

Primarily, OSR is tasked with pre-award grant activities and ensuring Caltech compliance with Federal grant regulations and sponsoring agency requirements. As such, OSR develops Caltech policies and procedures for Federal grants management and implements appropriate training programs. The Office of Post Award Administration is responsible for financial administration and monitoring of active Federal awards. Specifically, its Office of Cost Studies is responsible for preparing, distributing, and tracking Payroll Distribution Confirmation reports to provide certification of employee salaries and wages directly charged to Federal awards.

Within each Academic Division, Grant Managers are tasked with the administration and oversight of sponsored projects to ensure compliance with Federal and university policies and procedures. The Grant Managers typically assist and advise faculty members and are responsible for ensuring that awards and their budgets are created accurately in the University's financial systems, award expenditures are monitored on a monthly basis, charges to the awards are appropriate, and PIs confirm the reasonableness of employee salary charges on PDC reports. Specifically, PIs have primary responsibility for all aspects of the sponsored projects including approval of all charges and ensuring that the research is conducted in accordance with the award terms and conditions.

Objectives, Scope, and Methodology

Audit Objectives. Our audit objectives were: (a) to evaluate whether Caltech internal controls are adequate to properly manage, account for, and monitor salary and wage charges to NSF grants in accordance with OMB and NSF grant requirements and (b) to determine if salary and wage charges are allowable, allocable, and reasonable in accordance with Federal cost principles and NSF grant terms and conditions.

Scope and Methodology. The audit focused on Caltech's Payroll Distribution Confirmation (PDC) system and accordingly reviewed internal controls for ensuring that labor costs charged to NSF (i) were actually incurred, (ii) benefited NSF awards, (iii) were accurately and timely recorded and charged to NSF, and (iv) were for allowable and allocable-type activities as required by Federal and NSF requirements. In addition, we evaluated if the level of PI effort pledged in grant proposal and award documents was actually contributed by the faculty member to accomplish award objectives.

To address each of these control objectives, we engaged a statistician to provide expert advice in selecting a statistical sample of employee salary records for testing. The use of statistical tools and methodology will enable projecting our audit results to the entire population of universities to be included in our planned reviews of payroll distribution systems nationwide. However, due to the small statistical sample size of 32 employees tested, we are not able to make any projections to the total Caltech population of labor costs charged to NSF grants. Specifically, the FY 2005 salary costs for the 32 sample employees tested amounted to [REDACTED] and were supported by 63 PDC reports. Our statistical sample was derived from a total population of 921 Caltech employees who

charged [REDACTED] million¹ of salaries to NSF grants during FY 2005. This population excluded (a) any employee with total salary costs of \$100 or less and (b) all salary charges for undergraduate students. These amounts were excluded because of their small dollar value and the difficulty in locating undergraduate students for personal interviews.

We compared Caltech's policy and procedures to Federal and NSF requirements for allocating labor costs to Federal awards and interviewed Caltech personnel to gain an understanding of the controls in place to ensure salary and wages charged to NSF awards were reasonable and allowable. For each statistically selected salary record, we obtained the following documentation to determine whether labor costs Caltech charged NSF awards met the control objectives:

- PDC reports documenting 100 percent of each employee's compensation allocated to sponsored and non-sponsored projects for each reporting period.
- Appointment letters or other documents supporting the approved annual salary for employees.
- Labor Distribution Module Reports detailing the actual salary and wages charged to sponsored projects and other activities for each employee during each reporting period.
- Award documents to determine whether the grant had any terms and conditions that would affect allowable labor charges to the award.

To ensure that salary and wage costs charged to NSF awards were incurred and benefited NSF awards, we corroborated the information on PDC reports by interviewing the 32 sampled employees. We inquired whether (a) the labor charges documented were actually incurred on projects and activities, (b) the approximate percentage of effort actually worked on each sponsored project and/or activity was reasonably consistent with NSF labor charges, and (c) the type of work performed on NSF projects was generally consistent with the scope of the awards. We also interviewed selected Grant Managers to determine procedures for processing and monitoring employee salary charges to Federal grants. Additionally, we interviewed selected Principal Investigators (PI) to determine the number of projects and personnel they were responsible for and their processes for verifying work performance prior to approving and signing PDC reports.

To confirm that faculty effort pledged in grant proposals was actually contributed to accomplish grant objectives, we reviewed processes for reporting and tracking PI effort and whether the associated salary costs were properly included in the research organized base for computation of the University's indirect cost rate. We reviewed award documents for all Federal grants that a faculty member worked on during FY 2005 to determine the effort pledged on each project and compared this proposed effort to the

¹ Total FY 2005 salaries and wages charged to NSF grants totaled [REDACTED]. However, after eliminating all employees with total annual salary costs of \$100 or less and all undergraduate student wages, the adjusted population for sample selection had salary costs totaling [REDACTED].

approximate percentage of actual effort worked on the project. In addition, we determined whether and how Caltech tracked and documented PI effort on sponsored projects when no faculty salary support was requested or reimbursed by the Federal Government.

To determine whether labor costs were accurately recorded and charged to NSF, we compared the amounts in appointment letters or other documentation supporting salaries and wages paid to the amounts recorded in the Labor Module Distribution Reports for each individual in our selected sample. We recalculated salary and wage costs charged to NSF projects by using the salary shown on supporting documentation and apportioning it by the period of time represented on the PDC reports. We also reviewed labor transactions to determine whether Caltech followed Federal, NSF, and campus requirements on charging labor costs to NSF projects.

We determined whether Caltech officials approved and signed effort reports in a timely manner by comparing the date the PDC reporting period ended to the date the reports were approved and signed. Timeliness was based on Caltech's internal policy requiring (a) the Office of Cost Studies to publish and distribute PDC reports within 120 days after the end of each 6-month reporting period and (b) PIs or a cognizant individual to review and certify reports within 30 days of distribution.

Also, we reviewed prior audit reports on Caltech's Federal grants management program performed by OMB Circular A-133 auditors, the University's internal auditors, and the Defense Contract Audit Agency (DCAA)² to determine whether there were any audit findings and recommendations on labor effort reporting. Specifically, we interviewed cognizant audit staff and reviewed the working papers, as needed, to gain an understanding of the scope and procedures used in any audits of Caltech's payroll distribution reporting system and/or University management of labor costs charged to Federal projects. Typically, a review of the A-133 audit working papers is performed to ascertain the actual audit scope and procedures used by the auditors in order to (i) preclude any duplicative audit work and (ii) to determine the specific work performed on the labor effort reporting system. However, at Caltech, we did not review the A-133 working papers because DCAA reviews the working papers as part of their onsite audit efforts. Nevertheless, we did meet with the A-133 auditors to discuss their overall audit scope and procedures used for reviewing salaries and wages charged to Federal awards and the labor effort reporting system.

Finally, we met with senior management officials at the Office of Management and Budget (OMB) and the Office of Naval Research (ONR), Caltech's cognizant audit agency, to discuss Federal requirements for payroll distribution reporting systems. In particular, emphasis was directed to the required reporting of PI effort voluntarily committed to Federal projects. Similarly, we met with NSF officials to discuss the Foundation's requirements for reporting and tracking of PI effort.

² The Defense Contract Audit Agency performs audit work for the Office of Naval Research, who is Caltech's cognizant Federal audit agency.

We performed onsite audit work at Caltech for a 3-week period in July 2006 and completed the remainder of our audit work through phone interviews, emails, and documentation requests through December 2006. Our audit was conducted in accordance with the Comptroller General's *Government Auditing Standards*, June 2003, and accordingly included such tests of accounting records and other auditing procedures, as we considered necessary, to fully address the audit objectives.

FINDINGS AND RECOMMENDATIONS

1. Payroll Distribution System Does Not Accurately Report Faculty Effort on Federal Grants

Federal regulations require a payroll distribution system that will “reasonably reflect the activity for which individuals are compensated by the institution.” The system must encompass the time and effort expended by employees on both sponsored projects and all other activities on an integrated basis. Specifically, the labor effort reports must include employee activity/effort devoted to sponsored projects associated with (1) salaries and wages directly charged to the projects, (2) mandatory cost sharing provided on such projects, and (3) voluntary committed labor effort explicitly pledged in the subject project proposals. In addition, when sponsored projects do not include any paid faculty or senior researcher labor effort, an estimated amount must be computed and included in the university’s organized research base.

Our review of 32 statistically sampled employees disclosed that Caltech’s Payroll Distribution Confirmation (PDC) reports generally support the FY 2005 salary costs of █████ million directly charged to NSF grants. However, the PDC system does not capture the actual activity/effort that faculty members have either voluntarily contributed or pledged to working on such projects at no cost to the Federal Government. The PDC reports only provide reporting and certification of faculty salaries that are charged directly to sponsored projects. Five of the 32 sampled employees covered in our review were faculty members, of which 4 (80%) did not report any labor effort on 8 of their 23 Federal grants for which they received █████ million in funding. Five of these awards included \$100,000 of voluntarily committed cost sharing of effort that was contributed by 3 of the faculty members, but not reported in the PDC reports as required. Specifically, these 3 PIs had explicitly pledged effort in their 5 grant proposals, ranging from 1 to 20 percent, but they did not properly identify and report this effort in their PDC reports. In addition, for the 3 remaining grants, Caltech did not estimate a dollar amount for PI effort that Federal guidance requires to be included in the organized research base.

This occurred because Caltech does not have adequate policy and procedures for identifying and tracking labor effort voluntarily pledged by PIs in grant proposals in its PDC system. Without accurate PI activity reports, Caltech cannot validate to the Federal Government that the faculty members devoted the level of effort promised in grant proposals to accomplish research objectives. In addition, such unreported PI effort on sponsored agreements results in a higher negotiated Federal indirect cost rate and the Federal Government assuming increased indirect costs on Caltech awards.

OMB Requirements for Payroll Distribution System

OMB Circular A-21, *Cost Principles for Educational Institutions*, require certification of labor effort/activity contributed by employees on Federal grants. Specifically, paragraph 10.b.(2)(a) states that a payroll distribution system is required that

will “. . . reasonably reflect the **activity** for which the employee is compensated by the institution; and encompass both sponsored and all other **activities** on an integrated basis...” (emphasis added). Such a system must provide for after-the-fact confirmation of employee activity allocable to each sponsored agreement and each of the categories of activities and functions to which they are allocable. The payroll distribution system will include salaries charged directly to sponsored projects as well as salary-related cost sharing contributed by employees.

In addition, OMB Circular A-21 verification requirements for PI effort are discussed in a January 2001 OMB Clarification Memorandum.³ The subject Memorandum provides additional Federal guidance for determining if faculty effort devoted to grants should be reported as voluntary “committed cost sharing” versus “uncommitted cost sharing” and the proper treatment of such PI effort based on such determination. Specifically, the OMB Memorandum clarifies that faculty effort on organized research includes: (i) PI salary and wages directly charged to sponsored projects, (ii) PI effort required as mandatory cost sharing, and (iii) PI effort pledged and quantified as “voluntary committed cost sharing” in a proposal and/or award. Such faculty effort on organized research, including “voluntary committed cost sharing,” must be separately captured and reported for cost accounting purposes and included in the organized research base⁴ used for computing the university’s Federal indirect cost rate. However, “voluntary uncommitted cost sharing,” which is defined as faculty-donated time over and above that which is explicitly committed and budgeted for in a sponsored agreement, does not have to be reported in the payroll distribution system or included in the organized research base.

Furthermore, the OMB Memorandum states that some level of faculty effort is required on most Federal research grants⁵ and that such committed faculty effort, whether paid or unpaid by the Federal Government, should not be excluded from the organized research base by declaring it to be “voluntary uncommitted cost sharing.” As such, **when a sponsored agreement “shows no faculty (or senior researchers) effort, paid or unpaid, an estimated amount must be computed by the university and included in the organized research base.”** Clearly, the OMB Clarification Memorandum indicates that the Federal Government expects some level of faculty effort on most proposals and resultant awards to accomplish project objectives.

³ OMB Memorandum M-01-06, dated January 5, 2001 *Clarification of OMB A-21 Treatment of Voluntary Uncommitted Cost Sharing and Tuition Remission.*

⁴ The organized research base is used as the denominator for computing the Federal indirect cost rate applied to all sponsored projects. As such, a smaller organized research base will result in a higher indirect cost rate, thereby allowing the institution to recoup a greater portion of its indirect costs on Federal grants. Paragraph B.1.b., *Definition of terms*, of OMB Circular A-21 states that “Organized research means all research and development activities of an institution that are separately budgeted and accounted for.”

⁵ The OMB Memorandum states that some types of Federally-funded research projects, such as grants for equipment and instrumentation or student augmentation and/or training, do not typically require committed faculty effort.

The OMB Memorandum re-iterates that Circular A-21 requires a payroll distribution system to “encompass both the sponsored and all other activities on an integrated basis” and that “significant changes in the corresponding work activity must be identified and entered into the payroll distribution system.” Thus, when a faculty member reduces the “level of activity dedicated to other institutional responsibilities in order to shift his/her activities to organized research activities, the institution must reflect this reduction in the payroll distribution system (as an increase to the research effort component) and in the F&A⁶ proposals.”

In addition, in order to ensure that PIs have sufficient time to devote to their research activities, NSF requires PIs to identify in their grant proposals all of their current and pending research projects. Specifically, the NSF *Grant Proposal Guide*⁷ (GPG) requires identification of all projects and activities requiring a portion of the PI’s time, including the proposed award. The faculty member must report the person-months committed to each current and pending research project, regardless of the source of funding (e.g. Federal, State, public or private foundations, industrial or other commercial organizations, etc.) or whether any salary support is received from the sponsored projects. Such information is used by NSF in determining the reasonableness of the PI’s time to be provided to the proposed NSF project in light of the faculty member’s existing commitments to other research activities.

Caltech’s Payroll Distribution System Does Not Reflect Faculty Effort Voluntarily Committed To Sponsored Projects

Caltech’s Payroll Distribution Confirmation (PDC) system provides for reporting and certification of only salaries that are directly charged to each Federally-sponsored project on which an employee works. However, it does not verify that the level of effort voluntarily promised by PIs in grant proposals is actually contributed.

Specifically, our review of 32 statistically selected employees disclosed that the PDC reports generally supported the █████ million of FY 2005 salaries and wages directly charged to NSF grants. As such, for the 5 PIs included in our sample, we found that the PDC reports certified the salaries directly charged to 15 of the 23 Federal grants on which the faculty members worked. However, for the remaining 8 grants⁸ or 35 percent where no PI salary was directly charged to the awards, Caltech had no labor effort documentation to support that any faculty time or effort was expended working on these sponsored projects. These 8 grants involved 4 (80%) of the 5 PIs reviewed in our sample and had total Federal funding through FY 2005 of almost █████ million.⁹ In particular,

⁶ The F&A (Facility and Administrative) proposal is a synonymous term for Federal indirect cost rate proposal.

⁷ Chapter II, Paragraph C.2.h. of the NSF *Grant Proposal Guide*.

⁸ Five of the 8 Federal grants with no reported PI effort were NSF grants.

for 5 of these 8 grants or 63 percent, Caltech could not verify that 3 of the 4 PIs had provided the level of effort explicitly committed in their original grant proposals. Specifically, these 3 PIs had (i) pledged effort voluntarily ranging from 15 to 20 percent in the narrative portion of 3 grant proposals and (ii) included about 4 percent direct salary reimbursement of ██████ in the remaining 2 grant proposal budgets. As a result, approximately \$100,000 of voluntary committed cost sharing of PI effort on these 5 sponsored projects was not supported by PDC documentation as required.

In addition, for the remaining 3 of the 8 grants without faculty salary support, Caltech did not estimate an amount for PI effort to include in the organized research base, as required, for computing the Federal indirect cost rate. These 3 grants had total funding of \$2.6 million through FY 2005. Details on the 8 Federal grants with no PI salary charges follow:

Schedule of Federal Grants Lacking Required Documentation of Faculty Effort

PI	Federal Sponsor	Grant Number	Total Funding thru FY 05	Voluntarily Pledged PI Effort in Proposal Narrative	Salary Costs Associated With Voluntarily Pledged PI Effort	Direct PI Salary Included in Proposal Budget	Total Funding for Grants With No Estimated Amount in Organized Research Base
#1	NSF	██████████	\$450,000				\$450,000
	NSF	██████████	\$150,003	20%	██████████		
#2	DOE	██████████	\$11,861,000	20%	██████████		
#3	NSF	██████████	\$675,000				\$675,000
#4	NSF	██████████	\$1,476,795				\$1,476,795
	NSF	██████████	\$688,337			██████████	
	Air Force	██████████	\$300,000	15%	██████████		
	Army	██████████	\$264,411			██████████	
#5		Only grant with salary support ¹⁰					
TOTAL		8 grants	\$15,865,546	Aver. 19%	██████████	██████████	\$2,601,795

⁹ The \$15.9 million (see schedule of grants above) was the total project funding awarded and budgeted for in cost categories such as post-doctorate and graduate student salaries, equipment, travel, material and supplies, etc. The Department of Energy grant, with funding of \$11.9 million, was a continuing grant that was renewed every 2 or 3 years, thus had an award period from 1988 through 2005.

¹⁰ PI # 5 had only one Federal grant in FY 2005, which was an NSF project with part of his salary charged directly to the project. The PDC reports accurately reflected the portion of the PI's actual labor effort charged to the sponsored project.

Incomplete Committed PI Effort Reported on NSF Grant Proposals

Additionally, Caltech did not always properly report effort that the PI had actually committed to research projects and activities in the Current and Pending Support information required to be submitted with NSF grant proposals. We found that all 5 PIs (100%) included in our sample did not either accurately report the person-months committed to all projects/activities and/or did not include the current proposed NSF project in their proposal submissions. Specifically, for the 11 NSF grant proposals¹¹ reviewed, four of the 5 PIs did not include the currently proposed NSF project in 10 of the 11 grant proposals or 91 percent. Furthermore, three of the 5 PIs left blank the section of the proposal form requesting the PI to identify the person-months of effort that they had (i) committed on each of their current research projects and (ii) proposed to work on all pending projects on their 7 NSF grant proposals. Finally, while we found that one of the 5 PIs did report committed person-months on both his ongoing research projects and his currently proposed project, the individual mistakenly did not include fellowship funding from a private organization for 3 to 6 months of paid research effort annually. As a result, without complete information on a PI's other ongoing or pending awards, NSF officials could not determine the reasonableness of a PI's proposed time commitment to achieve objectives on the proposed NSF grant and/or to evaluate if the individual had adequate time to devote to the newly proposed project in relationship to the individual's other time commitments. The following table summarizes the results of our review:

Schedule of PI Reporting of Current and Pending Award Support Information on NSF Proposal Submissions

PI	# of NSF Grant Proposals	Person-Months Committed on All Projects Reported	Current Proposed NSF Grant Reported	Comments
#1	3	Yes	No	
#2	1	No	No	
#3	1	No	No	
#4	5	No	No	
#5	1	Yes	Yes	Fellowship funds not reported.
Total	11			

¹¹ Three of the 14 NSF grants were originally awarded to another university and transferred to Caltech when the PI moved. As a result, these 3 grants were not included in our analysis because the grant proposals were not submitted by Caltech.

Specific Examples of Inaccurate Reporting of PI Committed Effort

For 2 of the 5 PIs reviewed, the following details are provided to illustrate that Caltech's PDC reports support only PI salary costs directly charged to sponsored projects and not the actual level of faculty effort/activity devoted to working on such projects.

- One faculty member (PI # 2 per chart on page 9) had both a NSF grant and a Department of Energy (DOE) grant¹² to fund a major physics research laboratory with about 33 employees, of which one-third were post-doctorate scholars, one-third were graduate students, and the remaining one-third were senior scientists or technicians. The laboratory has been funded by both agencies for many years with the grants being renewed about every 2 to 3 years. During FY 2005, the NSF annual funding was \$1,270,000 and the DOE annual funding averaged about \$430,000. During our interview, the PI stated that with regards to his research time and effort, he devoted approximately 50 percent of his time to the NSF grant objectives and 50 percent to the DOE project objectives.

However, because the PI only charged salary to the NSF grant, the PDC reports allocated 17 percent of the faculty member's salary to the subject NSF award and the remaining 83 percent to a general category called non-sponsored projects, which was the portion of salary funded by the University. As such, Caltech did not have any PDC documentation to evidence that the PI had actually performed the 20 percent effort that he had explicitly pledged in the DOE grant proposal narrative.¹³ In accordance with OMB's January 2001 Clarification Memorandum, the 20 percent PI effort/activity on the DOE grant should have been identified, reported, and tracked as "voluntary committed cost sharing" in the PDC system. (The additional PI effort devoted to both the NSF and DOE grants is considered to be "voluntary uncommitted cost sharing" and is properly not required by OMB regulations to be separately tracked and reported.)

In addition, contrary to NSF requirements, the PI left blank the committed person-months for the sponsored projects and activities listed in the Current and Pending Support information section of his NSF grant proposal submission. The listing included 6 projects/activities for which he was receiving current support and 2 items that were pending support. Without the reporting of committed person-months, NSF did not have the information required to determine the reasonableness of the proposed PI effort to achieve project objectives or to evaluate if the PI had sufficient time to devote to the proposed project given the individual's time commitments to all other projects and activities.

¹² The laboratory was funded by NSF grant [REDACTED] and DOE grant [REDACTED].

¹³ Caltech proposal for renewal for DOE grant [REDACTED] for the period from January 1, 2003 to December 31, 2005.

- Another faculty member (PI # 4 per the chart on page 9) had 5 NSF grants, 1 Army grant, and 1 Air Force grant for computer network research, infrastructure, and education. The PI stated that he devoted 50 percent of his time to the 5 NSF grants, 20 percent to the Army and Air Force grants, and 30 percent to Caltech teaching and administrative responsibilities. However, the PDC reports only allocated and charged a total of 18 percent of the PI's salary to 3 of the 5 NSF grants; with the remaining 82 percent salary allocated to non-sponsored projects funded by the University.

Thus, Caltech is not able to provide PDC documentation to evidence that the PI devoted the 15 percent effort that he explicitly pledged in the narrative portion of the Air Force grant¹⁴ proposal. Pursuant to the OMB Clarification Memorandum, Caltech should have separately tracked and reported this 15-percent pledged PI effort as "voluntary committed cost sharing." Furthermore, Caltech is not able to provide PDC reports documenting that the PI devoted any effort to another NSF grant and an Army grant,¹⁵ although [REDACTED] of salary support was requested and included in the approved proposal budgets and awards. While the PI stated that he worked on these 2 grants during our interview, the PDC reports did not include any effort/activity because the PI did not choose to charge any salaries directly to these projects during FY 2005. In addition, for the remaining NSF grant where the PI did not charge any salary cost to the award, Caltech did not estimate a dollar amount for the PI's effort devoted to this award and include such an amount in the organized research base as required.

Finally, contrary to NSF requirements, the PI did not report in the Current and Pending information section of his 5 NSF grant proposal submissions the person-months committed to each of his sponsored projects and/or activities. For example, on NSF grant proposal [REDACTED], such required information was left blank for the 6 current and 1 pending sponsored projects that were listed.

Inaccurate Reporting Results in Federal Government Inability to Validate Faculty Effort on Federal Grants and Potential for Inflated Indirect Cost Rates

Without a payroll distribution system that reflects 100 percent of the actual activity/effort that PIs spend working on sponsored projects and other activities on an integrated basis, the Federal Government has less assurance that faculty members are providing the level of effort explicitly committed in grant proposals and/or awards to accomplish project objectives and is potentially assuming an increased share of Caltech indirect costs. The sponsoring agency expects faculty members to work the amount of time that the individuals have agreed to contribute in grant proposals. It is important for the Federal Government to be able to validate that a sufficient level of PI effort was committed to a sponsored project that is commensurate with the complexity and nature of

¹⁴ The Air Force grant No. is [REDACTED]

¹⁵ The NSF grant No. is [REDACTED] and Army grant No. is [REDACTED]

the research and dollar amount of grant funding. As such, accurate labor effort reports are essential to document both Federally-funded and voluntary committed effort devoted by faculty members to sponsored projects.

Secondly, unreported PI effort results in increased indirect costs paid by the Federal Government because Caltech must pay for the indirect costs associated with any specific commitment of PI effort voluntarily pledged in grant proposals. Such voluntary effort is considered by the Federal Government as “cost sharing” on the part of the institution. Thus, the portion of actual devoted PI effort/activity that is not correctly identified and reported in the faculty members’ PDC reports as “voluntary committed cost sharing” is improperly excluded from Caltech’s organized research base. Since the Federal indirect cost rate is computed by dividing total Caltech indirect costs by the organized research base, the improper exclusion of such costs from the base would result in a higher negotiated Federal indirect cost rate.

Accordingly, for the 5 PIs reviewed, we found that at least \$100,000 of additional faculty salary costs for 3 of the faculty members should have been included in Caltech’s organized research base for FY 2005. As previously discussed (see Schedule on page 8), the \$100,000 is the salary costs associated with the effort explicitly pledged by these 3 PIs in their grant proposals and/or award budgets for 5 of the 8 grants that did not have any faculty salaries directly charged to the projects. Given that the \$100,000 of salary associated with the unreported effort for the 3 PIs constituted (i) 60 percent of the 5 PIs reviewed and (ii) 20 percent of their total annual compensation, the total dollar amount of unreported PI effort that was not properly included in Caltech’s organized research base for FY 2005 could be significant for the total universe of 286 professorial faculty members.

Furthermore, for the remaining 3 of the 8 grants without faculty salary support, Caltech did not compute an estimated dollar amount for PI effort to include in the organized research base as required. Similarly, the total dollar value of this estimated amount not properly included in the organized research base for the entire universe of Caltech faculty members could potentially have been significant given that 51 percent or 142 of the 279 NSF grants in FY 2005 did not have any faculty salaries charged directly to the projects. These 142 NSF grants had total expenditures of over \$17 million or 23 percent of total Caltech expenditures on NSF grants during the fiscal year.

Our analysis disclosed that approximately ■ million of salaries associated with unreported PI effort would have to be excluded from the FY 2005 organized research base in order to reduce the Federal indirect cost rate by one-half percentage point. For every one-half percent reduction in Caltech’s FY 2005 indirect cost rate of 59.3 percent, the Federal Government could have reduced its reimbursement of Caltech indirect costs by approximately \$600,000.

Factors Contributing to Inaccurate Reporting of Committed PI Effort

Caltech has not established clear and comprehensive policy and procedures for addressing how PI effort committed in Federal grant proposals and awards should be identified and reported in the PDC system to fully comply with both Federal and NSF requirements. The major factors contributing to these procedural weaknesses follow:

- *PDC System Needs to Track Voluntary Committed PI Activity*– While Caltech has a manual “off-line” system to track mandatory and voluntary cost sharing on sponsored projects, the PDC system is not used to properly document and certify any salary-related cost sharing of labor effort on such sponsored projects. Specifically, the PDC system does not capture and report any mandatory cost sharing of labor effort or voluntary committed cost sharing of PI effort explicitly pledged in Caltech grant proposals. In addition, Caltech does not have procedures addressing how PI effort should be documented in the PDC system when the faculty member does not directly charge salary for effort originally committed and included in proposal budgets.

This occurred primarily because Caltech has not initiated actions to ensure that the additional Federal guidance provided in the January 2001 OMB Clarification Memorandum regarding the proper reporting and treatment of committed PI effort on sponsored agreements was incorporated into the University’s grant management policies and procedures. As such, Caltech’s PDC policy does not mention or refer to the OMB Clarification Memorandum. Similarly, Caltech’s policy on Cost Sharing on Sponsored Projects also lacks clear guidance on how salary-related cost sharing should be identified, reported, and tracked for cost accounting purposes. While the policy provides definitions for both committed and uncommitted cost sharing and refers to the OMB Clarification Memorandum, it does not specifically discuss when PI effort devoted to sponsored projects should be reported as “voluntary committed” versus “uncommitted cost sharing” and how or whether such PI effort voluntarily contributed at no cost to the Federal Government should be captured and reported in the PDC system.

Consequently, without clear guidance, Caltech generally considered and declared all PI effort, not directly reimbursed by Federally-sponsored projects, to be “voluntary uncommitted cost sharing” and not subject to PDC reporting and certification. As such, Caltech did not establish a process to compute and include an estimated amount for PI committed effort in the organized research base when sponsored projects showed no paid faculty salary. Also, it did not have any procedures to identify situations where the PI originally committed a certain amount of effort in his grant proposal submissions but subsequently decided not to charge any salary directly to the sponsored projects. If Caltech cannot document that such committed PI effort was actually provided, then Federal regulations require Caltech to

obtain sponsoring agency approval in advance when there is more than a 25 percent reduction in PI time¹⁶ devoted to the grant.

Furthermore, Caltech did not treat PI effort pledged in the narrative portion of grant proposals as “voluntary committed cost sharing.” However, such treatment of PI effort does not recognize that many Federal agencies, including NSF, incorporate the entire grant proposal by reference into its grant terms and conditions and results in the entire proposal being a part of the legally-binding contractual agreement between the parties. Thus, NSF and other sponsoring agencies have an expectation that Caltech will fulfill such cost sharing commitments voluntarily pledged in its grant proposals and that such commitments are necessary to accomplish the award objectives. As a result, Caltech must be able to demonstrate to the sponsoring agency that such cost sharing of PI effort has been provided and properly classified and documented in its PDC system.

In addition, Caltech did not have adequate procedures to ensure accurate reporting of committed PI effort in the Current and Pending Support information required to be submitted in NSF grant proposals. Since the PDC system only captured faculty salaries charged directly to sponsored projects, the University did not have a documented data source for reporting the committed person-months for each sponsored project in the Current and Pending Support information. Furthermore, there were no specific written procedures requiring Caltech grants management staff to specifically review such information for completeness before submission to NSF.

- *Formal Policy and Procedures Needed for Internal Evaluation of PDC System* - While Caltech’s Internal Audit Office performed an independent evaluation of its payroll distribution system as required by OMB A-21 regulations, the audit did not identify that the PDC system inadequately reported the actual effort/activity devoted by PIs on Federal grants. This occurred because Caltech’s PDC policy did not include any formal procedures for the required evaluation. Thus, there was no guidance which clearly defined the required scope and objectives for evaluating the PDC system to ensure its effectiveness and full compliance with OMB Circular A-21 standards. As such, while the internal audit included a review of campus compliance with Caltech’s own PDC policy and procedures, it did not thoroughly evaluate whether the system complied with all Federal requirements.

¹⁶ Section .25(c)(3) of OMB Circular A-110, *Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations*, requires recipients to request prior approval from Federal awarding agencies for revisions in budget and program plans when there is “. . . a 25 percent reduction in time devoted to the project by the approved project director or principal investigator.”

Conclusion

Our review disclosed that Caltech generally has a well established and sound Federal grants management enterprise program. Its PDC system generally supports employee salaries and wages directly charged to Federally-sponsored projects. However, it is critical for the Federal Government to have accurate faculty member activity reports to fully understand and validate that PIs have provided the level of effort committed in grant proposals and necessary to perform and manage the research conducted under its awards. Therefore, PI activity reports must be more than a confirmation of an individual's salary costs directly charged to awards. They must also reasonably document the level of activity contributed by the faculty members working on sponsored projects; including any voluntary committed cost-shared labor effort. As such, we believe that it is imperative for Caltech to re-evaluate its current procedures for implementing Federal requirements for certification of PI activity on sponsored projects to ensure full compliance with the overall intent of OMB Circular A-21 regulations, the January 2001 OMB Clarification Memorandum, and NSF grant requirements.

Recommendations

We recommend that the NSF Director of the Division of Grants and Agreements and the Director of the Division of Institution and Award Support, coordinate with the cognizant audit agency, as needed, to implement the following recommendations:

- 1.1 Work with Caltech to establish an internal control structure that provides for a payroll distribution system that reasonably reflects the actual effort/activity devoted by faculty members on sponsored agreements. At a minimum, Caltech should develop clear guidance and procedures to:
 - a. Ensure the PDC system reasonably reflects the actual activity on sponsored projects for which a faculty member is compensated. This should include proper reporting of actual PI time and effort worked on sponsored projects where:
 - Voluntary committed cost sharing of effort was explicitly pledged in grant proposals.
 - PI salaries were specifically proposed and included in the award budget, but never charged directly to the sponsored project.

Caltech Response

Caltech agreed to revise its policy to make clear pledges of time in the narrative of a proposal will be considered voluntary committed cost sharing whether or not reflected in the budget or award document. In addition Caltech agreed to

strengthen its controls to reflect and report salaries that are specifically proposed but not charged to the project.

OIG Comments

Once implemented, Caltech's response should address our audit recommendation.

- b. Establish a methodology for reasonably estimating and calculating an amount of "committed cost-shared" PI effort to be reported in the PDC system for sponsored projects with no PI salary reimbursements. Ensure such calculated amounts are supported by adequate documentation and included in the organized research base for computing the Federal indirect cost rate.

Caltech Response

Caltech agreed to establish a methodology to identify voluntary committed cost sharing where Caltech receives no salary reimbursement from the Federal Government. Furthermore, Caltech has submitted a revision to the FY 2005 incurred cost proposal to ONR to include an imputed salary calculation.

OIG Comments

Once implemented, Caltech's response should address our audit recommendation.

- c. Establish procedures and guidance to ensure that PI committed person-months is accurately reported for all projects and activities, including the currently proposed grant, in the Current and Pending Support information submitted in NSF grant proposals as required by Chapter II, Paragraph C.2.h. of the Foundation's *Grant Proposal Guide*.

Caltech Response

Caltech agreed to strengthen its internal procedure for the review of NSF grant proposals by the Office of Sponsored Research to give greater recognition to the importance of checking the completeness and accuracy of the information included in the Current and Pending Support section of the proposal. In addition, the topic will be presented at a Sponsored Research Forum so that grant managers in the academic divisions will be made aware of the importance of this section of the application.

OIG Comments

Once implemented, Caltech's response should address our audit recommendation.

- d. Establish a formal requirement for an independent evaluation of the PDC system to ensure its effectiveness and full compliance with OMB, NSF, and Caltech standards. Such a requirement should include procedures to ensure a systematic review of the payroll distribution system is performed to identify reasons for any deficiencies and to make appropriate recommendations, identify the specific office responsible for performing the evaluation, and how often such an evaluation should be conducted.

Caltech Response

Caltech concurred with audit recommendation and has revised their policy.

OIG Comments

Caltech's proposed corrective action appears responsive to the audit recommendation.

2. Distribution and Certification of Effort Reports Need To Be More Timely

Federal requirements provide that payroll distribution reports be signed and approved by the employee or an official who is in a position to know whether the work was performed. OMB Circular A-21 requires such reports to represent 100 percent of an individual's activity and provide an after-the-fact confirmation or determination that the reports provide a reasonable estimate of the activity for which the employee is compensated. Although Federal and NSF requirements do not specify when a payroll distribution report should be completed, university officials should provide the after-the-fact confirmation as close to the end of the reporting period as possible to ensure its reliability and avoid any concerns with such reports.

To ensure timely review and approval of its PDC reports, Caltech has established (i) a 120-day timeframe for compiling and distributing its reports for each 6-month reporting period and (ii) a 30-day turnaround requirement from the actual distribution date for returning the reports. Caltech established the 120-day timeframe for report compilation and distribution to allow 90 days for processing any cost transfers of Federal grant expenditures pursuant to the University's Cost Transfer policy and another 30 days for data validation and report compilation. The 30-day turnaround time was chosen because it provided the PIs a reasonable amount of time to complete and return the PDC reports. Establishing a combined 150-day time limitation is an important internal control procedure because it helps Caltech ensure a more reliable review and certification process.

Our review disclosed that Caltech PIs, who appropriately have first-hand knowledge of actual employee effort devoted on NSF projects, signed and approved the PDC reports. Furthermore, Caltech has made concerted efforts to ensure that all PDC reports were signed by the PIs and returned since the system was first established in October 2002. However, Caltech needs to direct their efforts to improving the timeliness of PDC publication, distribution, and certification. Specifically, we found that all 63 PDC reports for the 32 employees in our statistical sample were certified late subsequent to Caltech's established 150-day timeframe. The delay was primarily caused by Caltech not compiling and distributing the PDC reports within its established 120-day timeframe. Although Caltech's own statistical reports and a May 2005 internal audit report noted similar PDC timeliness issues, it has not taken the necessary management actions to address its challenges for timely PDC reporting.

Specifically, for each 6-month reporting period, the Office of Cost Studies requests the Office of Information Technology to compile and publish the PDC reports after the Academic Divisions have had the opportunity to process any cost transfers within a 120-day period after the end of the reporting period. When the reports are published, the Office of Cost Studies manually sorts and distributes the reports to the designated PDC Contact Persons in the Academic Divisions. However, in FY 2005, the PDC reports were published and distributed 1 day late for the first reporting period and 24 days late for the second reporting period, or an annual average of 12.5 days late.

After receipt by the Academic Divisions, the PDC Contact Persons are responsible for distributing the reports to the PIs for review and approval and collecting and returning the certified reports to the Office of Cost Studies within 30 days of the actual distribution date. According to established PDC procedures, the Office of Cost Studies will send Reminder Letters to the Contact Person, or other designated higher-level officials if the PDC reports are not returned within specified timeframes. However, contrary to the established 30-day turnaround time, the PIs approved and signed 16 of the 63 reports late, or 25 percent; ranging from 1 to 47 days late. It is noted, however, that of the 16 late reports, 12 were for employees working on the same NSF grant where the PI signed the PDC reports only 1 day late.

The chart below summarizes the amount of time beyond the combined 150-day requirement that Caltech took to sign and approve the 63 sampled PDC reports. The chart provides a breakdown of late reports by the 120-day distribution timeframe and the 30-day turnaround timeframe.

Schedule of Late FY 2005 PDC Reports

Days Late Beyond Established Timeframes	Beyond 120-day Timeframe for Distribution		Beyond 30-day Timeframe for PI Review and Approval		Beyond Combined 150-Day Timeframe			
	# Reports	% Reports	# Reports	% Reports	# Reports	% Reports	Associated Salary Costs	% of Salary Costs Tested
1-15	31	49%	13	21%	29	46%	\$823,581	50.2%
16-30	32	51%	2	3%	31	49%	\$795,173	48.5%
31-45					1	2%	\$6,175	0.4%
46-60			1	2%	2	3%	\$15,215	0.9%
Total	63	100%	16	25%	63	100%	\$1,640,145	100%

Since issuance of the PDC policy, Caltech itself has been aware of the need to improve the timeliness of report distribution and verification. Specifically, a May 2005 Caltech internal audit report disclosed similar problems with PIs not always approving and returning the PDC reports on a timely basis and recommended that Academic Divisions continue to improve the timeliness of remitting such reports. In addition, the Office of Cost Studies maintained statistical reports that disclosed similar timeliness issues. However, the Caltech statistics disclosed that PDC report timeliness declined in FY 2005 when compared to FY 2004. The statistics showed that the timeliness of PI certification of PDC reports for NSF grants was 7 percent worse in FY 2005, with 39 percent of the reports returned late in FY 2005 compared to 32 percent late in FY 2004. However, the timeliness issues for compiling and publishing the PDC reports remained about the same with an average of 14 days late in FY 2004 compared to 12.5 days in FY 2005. Furthermore, our review of Caltech PDC report statistics for all Federal grants disclosed similar timeliness issues. Specifically, in FY 2005, 39 percent of the total 466

PDC reports on NSF grants were not certified within 30 days of distribution compared to 38 percent late for the 1007 PDC reports for all Federal grants. The details of our analysis follow:

Comparison of Late PDC Reports for FY 2005 Compared to FY 2004

	On Time PDC Reports	Late PDC Reports			Total PDC Reports
	0 to 30 days	31-60 days	+ 60 days	Total Late	
NSF Grants Only					
FY 2005	283	152	31	183	466
% to Total	61%			39%	
FY 2004	310	108	37	145	455
% to Total	68%			32%	
All Federal Grants					
FY 2005	625	311	71	382	1007
% to Total	62%			38%	
FY 2004	647	233	71	304	951
% to Total	68%			32%	

As a result of the delays in certifying employee PDC reports on NSF grants, there is less assurance that the certification is reliable because PIs are generally relying on their memory when approving reported work activity for themselves and the individuals that work for them. As previously noted, Caltech officials must remember as far back as 11 months¹⁷ to confirm such employee activity at the end of the 150-day established timeframe. Many PIs have multiple awards and many employees for whom they are responsible, which increases the risk that the PIs' memory of the amount and type of activities performed will be less reliable as time increases past the established time limitations. For example, one PI informed us that he had 8 awards involved 15 graduate students and post doctorate scholars working for him in his laboratory. Thus, limiting the review and approval of the PDC reports to the shortest amount of time possible ensures a more reliable certification of salary costs associated with such activity on Federal awards.

Caltech is certainly to be commended for establishing a database for tracking the distribution and return of its PDC reports since the system was established in October 2002. Such a database was instrumental in permitting Caltech to timely follow-up on overdue reports by sending reminder letters to appropriate campus personnel. Also, the

¹⁷ The amount of time certifying officials have to recall activities is 11 months because the report period covers 6 months, compilation and distribution takes 4 months, and return is required in 1 month.

database allowed Caltech to account for 100 percent of its PDC reports in order to ensure that the required certification of all salaries and wages directly charged to sponsored projects was obtained.

However, Caltech needed to use such management information from its database to address the PDC timeliness issues identified with report issuance and certification. Although report timeliness issues are well documented, Caltech has never formally and officially notified PIs and grants management staff of the extent of the problems and the need for improvement. Although the May 2005 Caltech internal audit report recommended that Academic Divisions continue to improve the timeliness of remitting PDC reports, we could find no evidence that a formal Caltech notice or memorandum was ever issued delineating the PDC timeliness issues and emphasizing the importance for improvement. Without such notification, it is not clear that Caltech PIs were fully aware of their specific responsibilities for timely review and approval of PDC reports within 30 days of distribution and the magnitude of the report timeliness issues. Furthermore, without official Caltech management directives for improvement, Division grants management staff lacked the leverage to emphasize to PIs the importance of timely PDC report review and certification.

In addition, the Office of Cost Studies has not taken any specific actions to address the timeliness issues encountered with compiling and publishing the PDC report within the established 120-day timeframe. Cognizant officials stated that delays occurred because more time was required than originally anticipated to perform data validation checks of the salary allocation information prior to forwarding it to the Office of Information Technology for PDC report publication. Also, information technology delays have been encountered due to problems resulting from periodic enhancement of Caltech's grants management system. Unfortunately, the Office of Information Technology did not become aware of such compatibility issues until attempts were made to compile and publish the PDC reports – causing further delays while such issues were resolved.

Recommendations

We recommend that the NSF Director of the Division of Grants and Agreements and the Director of the Division of Institution and Award Support, coordinate with the cognizant audit agency, as needed, to implement the following recommendations:

- 2.1 Work with Caltech to establish an internal control structure that provides for timely certification of payroll distribution reports for employees working on Federal projects. At a minimum, Caltech should take concerted management actions to:
 - a. Formally notify Caltech senior management, PIs, and grant managers of the PDC report timeliness issues and emphasize the importance of timely PI review and certification of such reports within 30 days from distribution.

Caltech Response

Caltech agreed to formally notify senior management, PI's and grant managers of the PDC report timeliness issues and emphasize the importance of timely PI review and certification in accordance with Caltech policy. A memorandum issued from the Provost's office will be issued to this effect and distributed with the next issuance of reports.

OIG Comments

Once implemented, Caltech's response should address our audit recommendation.

- b. Develop and implement a management plan with specific actions and milestone dates to ensure PDC reports are compiled and published within the established 120-day time frame and reviewed and certified within the 30-day turnaround time.

Caltech Response

Caltech partially concurs with the recommendation. Caltech believes it has established mechanisms to monitor and require timely returns but will continue to reinforce the current processes.

OIG Comments

Caltech's proposed corrective actions generally meet the overall intent of the audit recommendation. While we agree that current processes can be more effectively used to achieve PI approval and return of PDC reports within the established 30-day turnaround time period, Caltech needs to focus on developing specific actions to ensure it compiles and distributes the reports within the specified timeframes. For example, the University can issue reminder letters before the 30-day timeframe to ensure timely PDC certification in lieu of waiting until the thirtieth day has passed. Such reminder letters could be sent via email to the PDC contact person with a copy to the cognizant PI so that he/she is aware of the need for timely certification of the reports.

3. Other Audit Matters

During our review of NSF salary charges for the 32 sample employees, we questioned \$10,994 of salaries and associated fringe and indirect costs overcharged to 2 NSF grants in FY 2005 (See Appendix A for details). In addition, we recommended that Caltech enhance internal control procedures for cost transfers between Federally-sponsored projects because of the high risk nature of the questioned costs identified.

- *Cost Transferred to NSF Grant From An Overspent Federal Award*

OMB Circular A-21, paragraph C.4.b., states that “Any costs allocable to a particular sponsored agreement . . . may not be shifted to other sponsored agreements in order to meet deficiencies caused by overruns...” To ensure proper implementation of such OMB requirements, Caltech has established a formal policy for *Cost Transfers To Federally Funded Awards* to provide guidance and specific procedures for transferring expenditures to a Federal award. The Caltech policy notes that the University and the PIs are responsible for ensuring that qualified staff perform “regular/timely (typically monthly) monitoring of account activity such as identification of potential cost overruns, timely correction of errors, and reallocation of expenses” in order to properly administer and exercise stewardship over Federally-funded projects.

However, on January 31, 2005, Caltech transferred \$6,666 of a graduate student’s salary costs to NSF grant [REDACTED] from an Air Force grant that had expired on January 14, 2005 and had cost overruns of \$92,499. The transfer was for 3.5 months of the graduate student’s salary originally charged to the Air Force grant from October 1, 2004 to January 14, 2005, resulting in the graduate student’s PDC reports reflecting that approximately 50 percent of the individual’s FY 2005 compensation was charged to the NSF grant. Yet, she informed us that she had only devoted about 25 percent of her effort to the subject grant during the fiscal year.

Due to this discrepancy, we performed additional analysis of the graduate student’s salary records for FY 2005 and interviewed the PI and the grant manager to obtain their comments. Our analysis disclosed that for 8 of the 12 months, the graduate student’s salary charges to Federal projects had resulted from cost transfers from other project accounts; thus only 4 months of salary had been originally charged to the proper Federal project. The PI stated that he reviews employee salary allocations on Federal grants on a quarterly basis with his grant manager to determine if any reallocation of expenses is required. According to the PI, this quarterly review is consistent with Caltech’s established 90-day timeframe for cost transfers.

Given the lack of what we view as sound internal controls over the graduate student’s FY 2005 labor charges, we are questioning the \$6,666 of salary costs transferred to the NSF grant from the Air Force award. We found a lack of monthly PI monitoring of Federal grant expenditures, an excessive number of cost transfers involving 8 of the 12 months of the individual’s annual salary, and a cost overrun situation with the Air Force grant. Furthermore, given the current circumstances and the high risk

associated with transferring costs from overspent Federal grants to other sponsored projects, we believe that Caltech needs to require additional approvals and establish more stringent criteria for the allowability of such transfers. Similar to labor cost transfers over 90 days, these types of cost transfers should require the completion of a formal Cost Transfer and Justification Form signed by the PI, the Division Chair, and the Associate Director of Project Accounting. Such an enhanced review and approval process will help ensure that such transfers are not for the sole purpose of shifting grants costs in order to meet deficiencies caused by overruns, as explicitly prohibited by OMB Circular A-21 allocability standards.

- *Documentation of PI Salary Paid by a Private Fellowship Award Not Obtained*

OMB regulations require appropriate documentation to support all grant charges. Therefore, any labor costs charged to a sponsored project must be supported by appointment letters or other documentation that confirms an employee's authorized salary or wages at the institution. However, we found that Caltech overpaid a faculty member \$1,868 in FY 2005 when the individual was on a 6-month sabbatical because documentation for salary paid by the sponsoring organization was not obtained. Specifically, the sponsoring organization directly paid salary to the faculty member pursuant to a fellowship grant and Caltech agreed to pay the difference between the individual's Caltech salary and the amount received from the fellowship grant. Upon our request, the faculty member provided documentation of the salary received from the fellowship grant and it was determined that Caltech had overpaid him \$1,868 during the 6-month sabbatical. Since the faculty member charged [REDACTED] percent of his salary to NSF grant number [REDACTED], we are questioning costs of \$187.

Recommendations

We recommend that the NSF Director of the Division of Grants and Agreements and the Director of the Division of Institution and Award Support, coordinate with the cognizant audit agency, as needed, to work with Caltech to implement the following recommendations:

- 3.1 Establish procedures that require that transfers of costs from overspent Federal grants to other sponsored projects require formal written justification and certification by the PI, the Division Chair, and the Associate Director of Project Accounting that the transfer of cost is proper and benefits the receiving award.

Caltech Response

Caltech agreed to enhance their procedures concerning the transfer of costs from overspent Federal grants to other sponsored projects. Their goal is to have an enhanced procedure in place by July, 2007.

OIG Comments

Once implemented, Caltech's response should address our audit recommendation.

- 3.2 Resolve the questioned salary costs and associated tuition remission, fringe benefit, and indirect costs totaling \$15,227.

Caltech Response

Caltech agrees to resolve the questioned costs of \$10,994 originally included in the draft audit report.

OIG Comments

Subsequent to the issuance of the draft audit report, we revised the questioned costs in order to include \$4,233 of tuition remission costs associated with the graduate student's salary that was charged to the NSF grant. Therefore, total questioned costs were increased to a total of \$15,227.

Schedule of Questioned Salaries and Wages For FY 2005

Employee	NSF Award Number	Questioned Costs				
		Salary Costs	Tuition Remission Costs ¹⁸	Fringe Benefit Costs	Indirect Costs	Total Costs
Graduate Student	██████	\$6,666	\$4,233	\$0	\$3,953	\$14,852
Faculty Member	██████	\$187	\$0	\$49	\$140	\$375
	Total	\$6,853	\$4,233	\$49	\$4,093	\$15,227

¹⁸ Tuition remission is a form of scholarship or student aid where a graduate student is relieved of the requirement to pay tuition to the university. OMB Circular A-21 allows such costs to be charged to a sponsored project if the student is conducting activities necessary to the sponsored project and permits such tuition remission costs to be charged using an average rate basis.

CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, California 91125

Office of the Associate Vice President for Finance and Controller
Financial Services Administration Building, Mail Code 229-15
626-395-3937

March 29, 2007

Mr. James Noeth
National Science Foundation
Office of Inspector General
4201 Wilson Blvd., Suite 1135
Arlington, VA 22230

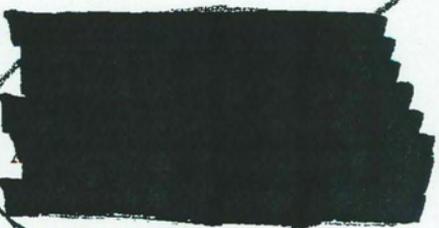
Dear Mr. Noeth:

Subject: Caltech's Response to Draft Report on Audit of Payroll Distribution System

Attached is a document stating Caltech's position on each of the audit findings contained in the Audit of Payroll Distribution System report, along with our agreement or disagreement with each recommendation. We truly appreciate the opportunities and time you and Joyce provided us to discuss the report and the findings therein.

Please let us know if you have any questions regarding our responses.

Sincerely,



Enclosure

cc:



Joyce Werking

**Finding No. 1:
Payroll Distribution System Does Not Accurately Report Faculty Effort on Federal Grants**

Caltech appreciates the NSF's recognition that its Payroll Distribution Confirmation (PDC) reports "generally support the FY 2005 salary costs...charged to NSF grants" and that Caltech "generally has a well established and sound Federal grants management enterprise program."

Overall, Caltech believes that its PDC system "reasonably reflect(s) the activity for which the employee is compensated by the Institution" as required by OMB Circular A-21, Section J10.b.2.(a)(ii).

Caltech's position has been that pledges of time made in grant proposals are not formal commitments to cost share. However, non-mandatory cost sharing specifically documented in a proposal budget is considered voluntary committed cost sharing. Voluntary committed and mandatory cost sharing is not captured in Caltech's PDC procedures, but instead in the Cost Sharing policy and procedures. These cost sharing commitments are included in Caltech's Organized Research base when calculating the F&A rate.

In response to the recommendations set forth in this audit report, we agree to enhance our definitions, policies, and procedures (identifying and tracking) to provide for more accurate reporting of voluntary committed labor effort devoted by faculty members.

Recommendations:

1.1 "...establish an internal control structure that provides for a payroll distribution system that reasonably reflects the actual effort/activity devoted by faculty members on sponsored agreements."

- a. Ensure the PDC system reasonably reflects the actual activity on sponsored projects for which a faculty member is compensated. This should include proper reporting of actual PI time and effort worked on sponsored projects where:*
- Voluntary committed cost sharing of effort was explicitly pledged in grant proposals.*
 - PI salaries were specifically proposed and included in the award budget, but never charged directly to the sponsored project.*

We concur. Caltech's position has been that pledges of time made in the narrative of grant proposals are not formal commitments to cost share. Caltech will revise its policy to make clear pledges of time in the narrative of a proposal will be considered to be voluntary committed cost sharing whether or not reflected in the budget or award document. In addition Caltech will strengthen its controls to

reflect and report salaries that are specifically proposed but not charged to the project.

- b. *Establish a methodology for reasonably estimating and calculating an amount of “committed cost shared” PI effort to be reported in the PDC system for sponsored projects with no PI salary reimbursements. Ensure such calculated amounts are supported by adequate documentation and included in the organized research base for computing the Federal indirect cost rate.*

We concur. Caltech has submitted a revision to the FY 2005 incurred cost proposal to ONR to include an imputed salary calculation.

- c. *Establish procedures and guidance to ensure that PI committed person-months are accurately reported for all projects and activities, including the currently proposed grant, in the Current and Pending Support information submitted in NSF grant proposals as required by Chapter II, Paragraph C.2.h of the Foundation’s Grant Proposal Guide.*

We concur. The internal procedure for the review of NSF grant proposals by the Office of Sponsored Research will be strengthened to give greater recognition to the importance of checking the completeness and accuracy of the information included in the Current and Pending Support section of the proposal. In addition, the topic will be presented at a Sponsored Research Forum so that grant managers in the academic divisions will be made aware of the importance of this section of the application.

- d. *Establish a formal requirement for an independent evaluation of the PDC system to ensure its effectiveness and full compliance with OMB, NSF, and Caltech standards. Such a requirement should include procedures to ensure a systematic review of the payroll distribution system is performed to identify reasons for any deficiencies and to make appropriate recommendations, identify the specific office responsible for performing the evaluation, and how often such an evaluation should be conducted.*

We concur and have included this as a formal requirement in our policy.

Finding No. 2.

Distribution and Certification of Effort Reports Need To Be More Timely

We appreciate NSF’s recognition of the concerted efforts that have been made by Caltech to ensure that all PDC reports are signed by the PI and returned.

While federal regulations do not dictate the frequency and timing of payroll distribution reporting, OMB circular A-21 j.10.c.(1).(e) states that “At least annually a statement will be signed by the employee, principal investigator, or responsible official(s) using suitable means of verification that the work was performed....” Caltech has used this federal guidance to develop internal guidelines for reporting.

With regard to report distribution, we agree that it is important for the reports to be generated and distributed in a timely manner. The delays noted in the audit report were the result of a major system upgrade during that time period. All reports in the following year (FY 2006) were distributed in a timely manner. We will continue to monitor and improve report turnaround. Caltech respectfully points out that 100% of the reports were returned within 47 days of distribution, with 94% being returned on or by day 31.

Recommendations:

2.1 *“...establish an internal control structure that provides for timely certification of payroll distribution reports for employees working on Federal projects.”*

2. *Formally notify Caltech senior management, PIs, and grant managers of the PDC report timeliness issues and emphasize the importance of timely PI review and certification of such reports within 30 days from distribution.*

We concur. Caltech will formally notify senior management, PI's and grant managers of the PDC report timeliness issues and emphasize the importance of timely PI review and certification in accordance with Caltech policy. A memorandum issued from the Provost's office will be issued to this effect and distributed with the next issuance of reports.

3. *Develop and implement a management plan with specific actions and milestone dates to ensure PDC reports are compiled and published within the established 120-day time frame and reviewed and certified within the 30-day turnaround time.*

We partially concur. As noted above, Caltech's policy has been modified to establish a more realistic distribution period of 120 business days and certification within 30 business days. We will continue to reinforce the already established mechanisms to monitor and require timely returns.

2.2 *Establish procedures requiring that transfers of costs from overspent Federal grants to other sponsored projects require formal written justification signed by the PI, the Division Chair, and the Associate Director of Project Accounting.*

We concur. We agree to enhance our procedures concerning the transfer of costs from overspent Federal grants to other sponsored projects. Our goal is to have an enhanced procedure in place by July, 2007.

2.3 *Resolve the questioned salary costs and associated fringe benefits and indirect costs totaling \$10,994.*

We agree to resolve the questioned costs of \$10,994.