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

MEMORANDUM

DATE: September 30, 2013

TO: Mary S. Santonastasso, Director
Division of Institution and Award Support

Karen Tiplady, Director
Division of Grants and Agreements

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

SUBJECT: *Audit of EarthScope San Andreas Fault Observatory at Depth (SAFOD) Expenditures* Report No. 13-1-005

Attached please find the final report for audit of EarthScope San Andreas Fault Observatory at Depth (SAFOD) expenditures for the period September 1, 2003 to March 31, 2009. The objectives of this audit were to determine if costs claimed were reasonable, allowable, allocable, and in accordance with the cooperative support agreement terms and conditions, and the OMB cost principles. We also reviewed the expenditures for possible fraud, waste, or abuse.

Our audit questions $339,277 of the costs claimed by Stanford University (Stanford) to NSF because Stanford did not comply with Federal and NSF award requirements. Specifically, we found $290,000 was improperly used to replace a subcontractor's uninsured lost equipment; $43,024 was spent in excess of the subaward agreement ceiling price; and $6,253 was spent on unallowable costs, such as sales taxes, promotional items, and alcohol. We have included Stanford's response to the draft report as an appendix.

To comply with Office of Management and Budget Circular A-50, *Audit Followup*, please coordinate with our office during the six month resolution period to develop a mutually agreeable resolution of the audit findings.

If you have any questions, please contact Marie Maguire, Director of Performance Audits, at (703) 292-5009.

Attachment

cc: Alex Wynnyk, Branch Chief, CAAR
G.P. Peterson
Michael Van Woert, NSB

Audit of EarthScope San Andreas Fault Observatory at Depth (SAFOD) Expenditures

National Science Foundation Award For the Period September 1, 2003 to March 31, 2009

National Science Foundation
Office of Inspector General

September 30, 2013
OIG 13-1-005

TM#12-P-1-010

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Introduction

The National Science Foundation (NSF) is an independent federal agency whose mission is "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense." To support this mission, NSF funds research and education across all fields of science and engineering, primarily through grants and cooperative agreements to more than 2,000 colleges, universities, and other institutions throughout the United States.

In 2012, we completed an audit[1] of NSF's management and oversight of contingencies in the construction portion of the EarthScope project, which consisted of four cooperative agreements, including one to Stanford University for the San Andreas Fault Observatory at Depth (SAFOD) project. SAFOD was to directly monitor a creeping and seismically active fault zone at depth, to sample fault zone materials (rock and fluids), and to measure a wide variety of fault-zone properties.

During our audit of EarthScope, we found that SAFOD's contingency expenses increased from the initial estimate of $1.5 million to over $4.9 million and that Stanford did not separately identify these contingency expenditures for SAFOD in its accounting system. Also during that audit, we performed a cursory review of all SAFOD expenditures and identified expenditures claimed on the EarthScope SAFOD award number 0323938 that appeared to be questionable. Therefore, we decided to audit SAFOD's expenditures to determine if costs claimed were reasonable, allowable, allocable, and in accordance with the cooperative support agreement terms and conditions and the Office of Management and Budget (OMB) cost principles.

Audit Results – $339,277 in Questioned Costs Because Stanford Did Not Comply with Federal and NSF Award Requirements or Its Internal Policies

Stanford's expenditures for the SAFOD project totaled nearly $24.6 million, of which 90 percent was subawarded to eight subawardees. In turn, one subawardee contracted portions of its work to several subcontractors. Due to the many levels of subcontracting used, the details of both the work completed and the corresponding expenditures were not readily visible to us. We selected a sample of $16.3 million of transactions for review; however, because of the significant amount of subawarded work, we were able to review only $753,541 of SAFOD expenditures.

Of the $753,541 reviewed, we identified $333,024 of payments to a subawardee and $6,253 of other direct costs as questioned costs because Stanford did not comply with Federal and NSF award requirements or with its own internal policies. We found that Stanford officials did not enforce provisions in the primary subaward agreement and were unaware that they claimed costs that were not allowable. Specifically, $290,000 was improperly used to replace a subcontractor's uninsured lost equipment and another $43,024 was spent in excess of the subaward agreement ceiling price. Of the

[1] *Audit of NSF's Management of Contingency in the EarthScope Awards,* Report No. 12-2-010, dated September 28, 2012.

remaining $420,517 reviewed, we found that Stanford spent $6,253 on unallowable costs, such as sales taxes, promotional items, and alcohol. We recommend that NSF require Stanford to repay the $339,277 in questioned costs.

Finding 1: $290,000 in Questioned Costs for Uninsured Drilling Equipment

Stanford had a subaward with ThermaSource, Inc. (ThermaSource) to serve as the prime contractor for all drilling services and drilling-related activities, which were critical components of the project. To address risk, the subaward contained an insurance clause which required ThermaSource to "obtain and maintain comprehensive liability insurance or self-insurance sufficient to cover its responsibilities under this project."

Drilling activities started in June 2004, and in September 2007, a ThermaSource subcontractor lost and abandoned an uninsured logging string down a SAFOD drill hole in an attempt to obtain a second set of core samples. We found that Stanford improperly expended $290,000 of NSF award funds between January and March 2008 to reimburse the subcontractor for this logging string.

We questioned this expenditure because Stanford officials did not enforce the insurance clause in the subaward agreement with ThermaSource when presented with the request to cover the cost of the lost drilling string. Instead, Stanford used NSF funds to replace the lost string. In their response to the draft report, Stanford officials told us that there was an understanding among the parties managing and performing the drilling that drilling into the San Andreas Fault was an uninsurable activity and that SAFOD would cover the loss of equipment should it occur. No such agreement is reflected in the terms of the subaward, which does not exempt any activities from the insurance clause. Stanford officials also indicated that ThermaSource could not obtain insurance on the logging string necessary to perform the drilling activities because the drilling activities were high-risk, but did not provide evidence to support that fact. Even if insurance could not be purchased, the insurance clause requires ThermaSource to self-insure. Stanford indicated that it did not pursue ThermaSource under the self-insurance provision of the clause because it was impossible for ThermaSource to obtain insurance. This statement reflects a lack of understanding of what self-insurance requires.

We questioned the $290,000 based on OMB Circular A-21[2], Attachment J, Section 25, which states that insurance required by a sponsored agreement is an allowable cost, and losses which could have been covered by permissible insurance are unallowable. As noted above, Stanford officials were unable to provide any evidence to support that obtaining insurance as the agreement required, was not possible due to the risk involved. By using award funds to cover this expense, there was less funding available for work remaining on the project.

It is noteworthy that an NSF panel conducting a November 2007 EarthScope Facility Management Review was made aware that the lost logging string was not insured and in its report stated "…it is the Panel's opinion that the approximately $390K cost of the lost tool

[2] Title 2 of the Code of Federal Regulations (CFR) Part 220 replaced OMB Circular A-21.

should not be passed on to the project." The panel consisted of five outside experts and the NSF Program Director responsible for the EarthScope project, and was charged with assessing the progress of the project and updates to the cost. The panel's report concluded that the risk management processes regarding possible tool failure and loss were not fully utilized. In their response to the draft report, Stanford officials indicated that no one at Stanford recalls seeing or discussing this recommendation by NSF. They stated that had the University been aware of the recommendation, it could have pursued ThermaSource to fund the replacement equipment for the lost logging string. We agree, and note that Stanford's acknowledgment of its ability to have ThermaSource bear the cost of replacing the logging string reinforces our basis for questioning the cost of that string.

Finding 2: $43,024 in Questioned Costs for Overpayment to Subawardee

We found that Stanford officials used NSF funds to pay ThermaSource, a subawardee, $43,024 in excess of the total ceiling amount of the subaward agreement. We questioned this $43,024 overpayment because it was not in compliance with the terms of the subaward agreement or with Stanford's internal policy requirements.

The subaward agreement between Stanford and this subawardee stated that the agreement amount was not to exceed [redacted]; however, Stanford paid ThermaSource a total of $[redacted] Additionally, Stanford's *Research Policy Handbook*, in place during the award, required that the Principal Investigator ensure that costs "were incurred within the overall cost limitations."

This overpayment occurred because Stanford's Accounts Payable department did not associate related pre-award planning and water rights expenditures directly with the ThermaSource subaward in the new accounting system. When Stanford converted to a new accounting system in September 2003, this department, through an error, did not include the August 2003 pre-award expenditures in the ThermaSource account, thereby, reducing the total expenditures on the subaward. At the end of the award, Stanford's accounting records indicated a remaining balance for the ThermaSource subaward of $20,522. However, this balance did not include the $63,546 of preaward costs, resulting in a net overpayment to ThermaSource of $43,024.

Finding 3: $6,253 in Questioned Costs for Unallowable Expenditures Including Sales Taxes and Promotional Materials

We found that Stanford officials charged $6,253 in unallowable costs to the SAFOD award for sales taxes on two separate purchases; promotional materials (t-shirts); alcohol and related sales taxes; a meal that occurred after travel ended; and facilities and administrative (F&A)[3] costs of

[3] 2 CFR 220 states that "facilities and administrative (F&A) costs… means costs that are incurred for common or joint objectives and, therefore, cannot be identified readily and specifically with a particular sponsored project, an instructional activity, or any other institutional activity."

[redacted] percent associated with these expenditures.[4] The following unallowable costs were charged to the NSF award:

- $[redacted] of sales taxes
- $ [redacted] for promotional needs
- $ 168 of alcohol and related sales taxes
- $ 63 for a meal that occurred after travel ended
- $ [redacted] for F&A costs associated with promotional needs, alcohol, and a meal

$6,253 total unallowable costs

We questioned these unallowable costs because they were not in compliance with OMB cost principles and Stanford's internal requirements. Specifically, OMB Circular A-21 Attachment J contains the relevant cost principles. Section 49 states that, "Taxes… are allowable, except for taxes from which exemptions are available to the institution directly or which are available to the institution based on an exemption afforded the Federal Government."

Section 1.f. states, "Unallowable advertising and public relations costs include the following…. (3) Costs of promotional items and memorabilia." Finally, section 3 states that, "Costs of alcoholic beverages are unallowable." Stanford's *Principal Investigator Responsibilities at Stanford University* policy states that costs "must be allowable as defined by Circular A-21."

In addition, the *Stanford University Cardinal Curriculum* cost policy states that, "Expenses unallowable for federal reimbursement include… Alcoholic beverages." Furthermore, Stanford's *Administrative Guide Memo 36.7 Travel Expenses* states that if the traveler remains at the business destination for nonbusiness reasons, reimbursement of meals and lodging is not allowed. Due to oversight, Stanford officials did not comply with either the relevant cost principles or their policies when they paid for these unallowable items using NSF funds.

Recommendation

We recommend that NSF's Director of the Division of Institution and Award Support (DIAS) request Stanford University to repay NSF the $339,277 of questioned costs.

Summary of Awardee Response and OIG Comments

Stanford disagreed with findings 1 and 2 and partially agreed with finding 3. We made changes where appropriate in the body of the report to include items from Stanford's comments.

For finding 1, Stanford states that the SAFOD project involved drilling the first-ever well into the San Andreas Fault located in one of the world's most geologically active areas and that there was an understanding among the parties that drilling into the Fault was an uninsurable activity and that SAFOD would cover the cost of lost equipment should it occur. We did not find any

[4] F&A costs were not assessed on the [redacted] of questioned sales tax charged on capital expenditures.

exemption for such activities in the insurance clause and maintain our position that any associated risks with drilling were the responsibility of ThermaSource. Stanford officials did not enforce the self-insurance clause in the subaward agreement, and were unable to provide any documentation or other evidence to support its assertion that insurance could not be obtained. Stanford's response states that an official from Schlumberger, ThermaSource's subcontractor, confirmed in July 2013 that the logging activity was not insurable. However, this documentation, which we received after Stanford provided its formal response, was not directly related to the SAFOD project. We further note that, in addition to the insurance clause, the subaward contains an indemnification clause providing that Stanford will be held harmless from liability, damage, loss, or expense.

Stanford also states in its response that NSF approved additional funding on November 20, 2007 and that these funds were used to fund additional drilling and the lost equipment. However, the funding provided in November 2007 was based on a request for $300,000 dated August 16, 2007, before the drilling string was lost during the second week of September. The August 2007 funding request was for coring activities cost approximately $50,000 per day. NSF and the EarthScope Management Team conducted an on-site review on September 7, 2007, and agreed to increase the amount awarded to $445,000.

Finally, as stated in our report, the November 2007 EarthScope Facility Management Review recommended that NSF not pay for the cost of the lost equipment. In its response to our draft audit report, Stanford states that had Stanford been aware of the recommendation in this report at the time, "Stanford could have pursued ThermaSource to fund the replacement equipment for the lost logging string." This last statement undermines Stanford's other points and demonstrates that Stanford chose to charge the government for the lost drilling string instead of requiring ThermaSource to bear that cost.

For finding 2, Stanford replied that the $43,024 of questioned costs represent allowable and necessary expenditures that directly benefitted the SAFOD project. We are questioning these costs because Stanford did not properly manage its subaward agreement and incurred costs in excess of the ceiling amount of this subaward agreement. We are not questioning the allowability or necessity of these costs in regard to the definition of allowability per the cost principles.

Finally, for finding 3, of the $7,160 of questioned costs in our draft report, Stanford concurs with questioning $6,253 and stated that it will reimburse this amount to NSF. Stanford does not concur with questioning $907 of direct costs and related F&A for reprints and publications. We reconsidered our position after receiving Stanford's response and have excluded these reprint and publications costs from the audit finding and adjusted the amount of questioned costs accordingly. We therefore are not including Exhibits 1 and 2 of Stanford's response in our audit report.

We have included Stanford's response to this report, without the exhibits, as Appendix A.

OIG Contact and Staff Acknowledgements

Marie Maguire – Director of Performance Audits
(703) 292-5009 or mmaguire@nsf.gov

In addition to Ms. Maguire, Lisa Hansen and Ken Lish made key contributions to this report.

Appendix A: Awardee Response

STANFORD
UNIVERSITY

Research Financial Compliance and Services

[redacted]
Associate Vice President

July 29, 2013

Dr. Brett M. Baker
Assistant Inspector General for Audit
Office of the Inspector General
National Science Foundation
4201 Wilson Boulevard, Suite I-1135, Arlington VA 22230

Subject: Response to Audit of EarthScope San Andreas Fault Observatory at Depth (SAFOD) Expenditures Draft Report

Dear Dr. Baker:

Stanford University appreciates the opportunity to respond to the issues addressed in the draft report. Stanford disagrees with finding #1 and #2 and partially agrees with finding #3.

SAFOD expenditures totaled nearly $24.6 million dollars. Stanford provided a listing of all expenditures incurred during the life of the award to the NSF Inspector General (IG) audit staff. The IG then requested 176 invoices with supporting documentation representing $16.3 million dollars of costs covering expenses from 2003 to 2009. Stanford supplied the requested information which included contact data for the subawards. Over 90% of the costs were subawards by Stanford to eight subcontractors. In turn, one subawardee contracted portions of its work to several subcontractors.

Finding 1: $290,000 in Questioned Costs for Uninsured Drilling Equipment

OIG noted there are two related concerns involving funds expended for the logging string lost down a SAFOD drill hole: (1) that the Stanford subaward with ThermaSource provided insurance coverage for this kind of loss (or ThermaSource was to self-insure for the loss), and so the loss should have

128 Encina Commons
Stanford, CA 94305-6025

[redacted]

been addressed by ThermaSource and (2) that the expenditure was related to the insurance coverage ThermaSource was required to obtain per the subaward agreement with Stanford and was therefore not an allowable cost under OMB Circular A-21.

The nature of this project required Stanford and its subcontractors to work in good faith to make real-time decisions about how to proceed in the face of losses of the kind suffered here. Stanford determined that the lost tool string was not a loss covered by the sub-contractor's insurance or self-insurance and that the loss resulted from risks inherent in the research. Stanford made the decision to treat the loss as a cost of the project, absent guidance from the NSF Program Management to the contrary, thereby insuring that the project goals would be accomplished and protecting the substantial investment to date in the project.

It is apparent that the insurance requirement referenced by the IG was not intended to cover the drilling risk inherent in the research. The project involved drilling the first-ever well into the San Andreas Fault located in one of the world's most geologically active areas, referred to as the Circum-Pacific Seismic Belt. There was an understanding among the parties managing and performing the drilling that drilling into the San Andreas Fault was an uninsurable activity and that SAFOD would cover the loss of equipment should it occur.

Schlumberger and the SAFOD team concluded that the drilling plans would occur under "tough logging conditions (TLC)" and therefore would be uninsurable. The logging condition was considered TLC because the well begins vertically and then bends to 30 degrees from horizontal to penetrate and cross the active San Andreas Fault at seismogenic depth (over 3 kilometers deep). The objective of the SAFOD project was to better understand the processes controlling faulting and earthquake generation by providing direct observation of the composition, physical state, and mechanical behavior of a major active fault zone at the depths where earthquakes occur. Loss of equipment in and near an unstable fault zone was a clear and obvious risk of the research. Deformation of the wellbore was a constant occurrence and was the ultimate cause of the equipment becoming stuck and not retrievable. Project participants believed at the time – and continue to believe – that no insurer would accept a risk of this kind, and SAFOD was responsible for the lost equipment. Below you will see from Dr. [redacted] comments why the equipment was uninsurable and why SAFOD was responsible for covering the cost of the equipment.

Comments by the Principal Investigator, Professor [redacted], e-mail of May 30, 2013:

"It was absolutely clear to everyone involved (most especially the NSF) that scientific drilling into the San Andreas Fault at great depth was a high risk/high reward endeavor. In fact, we had many problems over the 5 year project but ultimately prevailed. We kept the NSF fully informed when problems arose and, with their full knowledge and consent, managed to find ways to successfully achieve the scientific goals of the project.

It never occurred to us to "pursue reimbursement for the lost tool string from ThermaSource under the self-insurance language of clause 15 in the subaward agreement" because it was impossible for ThermaSource to obtain insurance. As I've indicated before, we asked Schlumberger about this and were told they do not offer tool insurance when TLC (tough logging conditions) apply. This means they lower the logging tools attached to the end of the drill pipe (instead of to the end of a cable) because of the possibility that they might need to pull hard in case it got stuck in the hole. Unfortunately, it did and we could not get it out."

In July, 2013, [redacted] of Schlumberger confirmed that logging across the San Andreas fault was not insurable. This documentation was shared with the OIG.

Notably, the record indicates clearly that Stanford kept the NSF informed about the lost tool string as demonstrated in the comments to recommendation #5 in the November 14 – 15, 2007 EarthScope Management Review report conducted for the NSF Directorate for Geosciences, Division of Earth Science, Kaye Shedlock, Earthscope Program Director provided by the IG.

However, what seems unclear was how the NSF informed Stanford concerning the funding of the lost equipment or how the project should proceed if no additional funding was forthcoming. No one at Stanford recalls seeing or discussing the report, (particularly recommendation #5) or a draft of the report or receiving written guidance from NSF Program Management about accounting for the charge for the lost tool string. Stanford requested a list of the recipients of the report from the IG, but due to the passage of time and changes in personnel the information could not be provided. Below you will see Dr. [redacted] comments concerning recommendation #5 and NSF notification that the cost of funding the lost equipment was unallowable.

Comment by the Principal Investigator, Professor [redacted] e-mail of May 20, 2013:

"As indicated in the previous email I sent (as well as the one sent by co-PI [redacted], we have no recollection of Recommendation 5 (p. 13) of the review panel that NSF not pay for the lost tool string. Had NSF taken accepted [sic] this recommendation of the review panel, there would have [sic] a major financial crisis in Nov. 2007 that never occurred. I cannot say for sure that we never saw this report. I simply don't remember. I do know that if NSF had accepted Recommendation 5, it is not something we would have forgotten."

Significantly, NSF approved additional funding on November 30, 2007. These funds, along with funds contributed by Stanford University and the USGS, were used to fund additional drilling and the lost equipment which resulted in the successful completion of the project. Had Stanford been aware of the recommendations in the report at the time, Stanford could have pursued ThermaSource to fund the replacement equipment for the lost logging string.

Stanford also provided a written email from the Principle Investigator (PI) to the IG stating that the activity was not insurable. In addition, Stanford provided the IG the relevant contact information for ThermaSource. Stanford is not aware of any information, including information from ThermaSource's communication with the IG, suggesting the event was insurable.

Stanford has demonstrated that both Stanford and its contractor have met the reasonable person standard in the execution of the project and billing for costs incurred. We believe a reasonable individual would come to the same conclusion that drilling more than three kilometers underground through a fault in one of the most active earthquake zones in the world is uninsurable. A reasonable individual would also understand why all parties were of the understanding that the down hole drilling risk was the responsibility of SAFOD and not the contractors.

Stanford successfully completed the SAFOD project within the NSF approved budget. Stanford believes that the funds paid to ThermaSource for the lost equipment were appropriate.

Finding 2: $43,024 in Questioned Costs for Overpayment to Subawardee

The $43,024 paid to ThermaSource is not an overpayment. The amount represents allowable and necessary expenditures that directly benefitted the

SAFOD project. Without incurring the planning costs and paying for the water rights this project could not take place.

Stanford was aware that the total payment to ThermaSource exceeded the subcontract amount. Stanford noted the $43,024 of expenditures in excess of funding on the ThermaSource subaward agreement at financial closeout of the SAFOD award in June 2009. This documentation was supplied to the IG. As a result of the closeout review Stanford requested in June 2009 and received permission in July 2009 from NSF to re-budget $37,133 of unexpended participant costs to the ThermaSource subaward agreement. The documentation supporting this was shared with the IG. Stanford re-budgeted the remaining $5,891 to cover the difference. Stanford's refusal to pay unauthorized expenditures incurred by ThermaSource made further subaward agreement amendments impossible. This is the reason why the subaward agreement was not amended to add the additional funds.

The PI did successfully complete the project within the budget authorized by the NSF. Stanford reimbursed ThermaSource for the $43,024 of reasonable and necessary expenditures. Stanford complied with University policy and A-21.

Finding 3: $7,160 in Questioned Costs for Unallowable Expenditures Including Sales Taxes and Promotional Materials

Stanford concurs with the sales tax disallowances and minor other cost disallowances totaling $6,253. These costs will be reimbursed to the NSF. Stanford believes that the remaining $907 of costs were reasonable and allowable.

The $907, $[redacted] of direct costs plus $[redacted] of F&A, were for reprints and publications about the SAFOD project that were used to inform the Earthscope community and other interested parties about its accomplishments. This method of dissemination is in conformance with the award under "Additional Terms and Conditions, section m":

Additional Terms and Conditions:

> m. "Engaging in appropriate programs to inform the EarthScope scientific community about the potential uses of the SAFOD facility and to keep the community informed about its accomplishments."

Stanford believes that the expenditures to procure the following two documents and subsequent distribution to researchers and the community met the conditions of term (m) and the spirit of informing the community of the status and accomplishments of the SAFOD project. The reprint (exhibit 1) is approximately 100 pages of scientific articles concerning SAFOD. One article has been incorporated in exhibit 1 as an example. The Discovery magazines (exhibit 2) featured a SAFOD specific article and were also distributed to researchers and interested parties. Stanford invites you to read the articles to both inform yourself about the research and understand why these costs are allowable and reasonable.

Please contact [redacted] or me if you have any questions or need further information. We look forward to working with you to resolve this matter.

Sincerely,

[redacted]

Associate Vice President
Research Financial Compliance and Services
Stanford University

cc: [redacted]

Greg Anderson, NSF
Marie Maguire, NSF
Lisa Hansen, NSF
Ken Lish, NSF

Appendix B: Objectives, Scope, and Methodology

The objectives of this audit were to determine if costs claimed were reasonable, allowable, allocable, and in accordance with the cooperative support agreement terms and conditions and the OMB cost principles. We also reviewed the expenditures for possible fraud, waste, or abuse.

To accomplish our objectives, we examined the EarthScope San Andreas Fault Observatory at Depth (SAFOD) award number 0323938. The award term was from September 1, 2003 through March 31, 2009 and was financially closed on September 30, 2009. At our request, Stanford officials provided detailed transaction data for costs charged to this award. This data consisted of more than 2,800 transactions totaling approximately $24.6 million, of which 90 percent was subawarded to several entities. One subawardee in turn contracted portions of its work to others. Due to the many levels of subcontracting used, the details of both the work completed and the corresponding expenditures were not readily visible to us.

We originally selected a sample of 176 transactions totaling almost $16.3 million to test. However, we found that $15.8 million of this sample related to subaward transactions and that Stanford's documentation related to these transactions did not contain enough information for us to conclude on the appropriateness of these costs. For example, many of the invoices from Stanford's largest subawardee (ThermaSource) contained charges from several subcontractors and we did not obtain detailed cost information from them. From our sample, we were able to review only 115 transactions totaling $420,517. These transactions were selected based on auditor judgment and the audit results cannot be projected to the total universe of transactions for the SAFOD award. During our audit of NSF's oversight of the EarthScope project[5], we became aware of the lost logging string and gathered preliminary information surrounding its circumstances. As part of this audit of SAFOD, we then performed a more comprehensive review of the transactions used to pay for the lost logging string as well as a review of the subawardee's award agreement, correspondence, and aggregate subaward expenditures. From this review, we were able to identify an additional $333,024 of questioned costs. Therefore, based on our sample of transactions totaling $420,517 and our review of $333,024 in transactions relating to issues identified in the EarthScope audit, we were able to review a total of $753,541 of SAFOD expenditures. For the questioned costs we identified, we also determined if there were any corresponding F&A costs that were unallowable.

Our work required reliance on computer-processed data obtained from Stanford and NSF. We obtained NSF data by directly accessing NSF's Federal Financial Report (FFR) system. We assessed the reliability of the data provided by Stanford by comparing costs charged to the NSF award account within Stanford's accounting record to the federal share of expenditures, as reflected in Stanford's final FFR submitted to NSF at the closure of the award. Based on our testing, we found Stanford's computer-processed data sufficiently reliable for the purposes of this audit. We did not review or test whether the data contained in, or controls over, NSF's FFR system were accurate or reliable.

[5] *Audit of NSF's Management of Contingency in the EarthScope Awards,* Report No. 12-2-010, dated September 28, 2012.

In assessing the allowability of costs reported to NSF by Stanford, we also gained an understanding of the internal controls structure applicable to the scope of this audit through interviews with Stanford officials, review of policies and procedures. We determined Stanford's compliance with its policies and procedures, as well as the following:

- Office of Management and Budget Circular A-21, *Cost Principles for Educational Institutions* (2 CFR, Part 220)
- Office of Management and Budget Circular A-110, *Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-profit Organizations* (2 CFR, Part 215)
- National Science Foundation *Proposal and Award Policies and Procedures Guide,* Part II: Award & Administration Guide
- Award-specific terms and conditions

We identified instances of noncompliance resulting in questioned costs that are discussed in the relevant sections of this report. We did not identify any instances of fraud, illegal actions, or abuse.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions, based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We held an exit conference with Stanford officials on June 14, 2013.