



## National Science Foundation

4201 Wilson Boulevard  
Arlington, Virginia 22230

Office of Inspector General

### MEMORANDUM

DATE: March 31, 2011

TO: Jeffery Lupis, Division Director  
Division of Acquisition and Cooperative Support (DACCS)

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

SUBJECT: Revised NSF OIG Audit Report No. OIG-11-1-001, Audit of Association of Universities for Research in Astronomy, Inc.'s (AURA) Cost Book Proposal for the Advanced Technology Solar Telescope (ATST)

We contracted with the Defense Contract Audit Agency (DCAA) to perform an audit of Association of Universities for Research in Astronomy, Inc.'s (AURA) \$298 million Cost Book Proposal for the construction of the Advanced Technology Solar Telescope (ATST).<sup>1</sup> The first objective of this audit was to assess the adequacy of AURA's ATST cost book/construction proposal to determine if the proposal is acceptable for audit. If determined to be acceptable for audit, then the second objective is to assess whether the proposal was prepared in accordance with applicable federal requirements [including OMB (Office of Management and Budget) cost principles in 2 CFR (Code of Federal Regulations) Part 230], and if the proposal is considered acceptable as a basis for funding a fair and reasonable price.

Also included in DCAA's scope of work was an audit of the adequacy of AURA's accounting system to determine if it is properly designed for accumulating and billing costs under Government awards. At this time, DCAA is finalizing its accounting system audit report. We provided DCAA's draft accounting system audit report to NSF's cooperative agreement specialist and program officer on November 9, 2010. We will transmit the final accounting system audit report to NSF management upon its receipt.

### Background

NSF funded \$146 million of the \$298 million ATST construction budget to AURA with American Recovery and Reinvestment Act (ARRA) funds in January 2010 under Cooperative Agreement No. AST-0415302. Also in 2010 (through June), NSF funded \$20 million out of the

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<sup>1</sup> The purpose of the ATST project is to provide a flagship facility in Maui, Hawaii for the study of magnetic phenomena in the solar atmosphere. The ATST will be the first large, ground-based, open-access U.S. solar telescope in more than 40 years.

balance of \$152 million of the total ATST construction budget from Major Research Equipment and Facilities Construction (MREFC) funds under Cooperative Agreement No. AST-1011851. This construction project is anticipated to be performed over an eight-year period from FY 2010 through FY 2017.

In assessing the adequacy of AURA's ATST construction proposal, DCAA issued two inadequacy memorandums that were more than six months apart. DCAA's first inadequacy memorandum was dated March 22, 2010, and its second inadequacy memorandum was dated October 1, 2010. Upon receipt of DCAA's March 22, 2010 memorandum, AURA requested to provide additional information regarding its ATST proposal, and DCAA agreed to review this additional information. However, despite the additional information and review, DCAA's conclusion remained unchanged. In both memorandums, DCAA stated that AURA's ATST proposal was inadequate; therefore, an audit could not be performed until AURA provides an adequate proposal for review. We have attached the two DCAA inadequacy memorandums to this transmittal letter. On November 19, 2010, AURA provided DCAA a response to its October 1, 2010 inadequacy memorandum, which is also attached to this transmittal letter. (The AURA response letter is dated October 18, 2010.) DCAA's findings and AURA's response are summarized below.

### **DCAA Concluded that AURA's ATST Proposal was Unacceptable for Audit**

DCAA could not complete the audit of the ATST proposal. DCAA reported on October 1, 2010 that AURA's ATST proposal was unacceptable for audit citing four basic reasons that DCAA had previously cited in its March 22, 2010 inadequacy memorandum. Since the issuance of DCAA's first inadequacy memorandum, AURA provided additional documentation to support the adequacy of its proposal, and DCAA evaluated this additional documentation and discussed the requirements with AURA. However, despite the additional review over a six-month period, DCAA continues to consider AURA's proposal unacceptable for audit. As a result, DCAA could not affirm that the proposal is acceptable as a basis for funding a fair and reasonable price. Consequently, NSF does not have auditor's assurance that the proposal (which NSF has already funded, as discussed above) is an acceptable basis for funding. The four deficiencies cited in DCAA's October 1, 2010 inadequacy memorandum are summarized below.

**1. Proposed Materials and Subcontracts (Non-labor costs).** DCAA found that AURA's ATST proposal was based on unsupported estimates and outdated vendor quotations, not on current fixed price bids. Therefore, DCAA concluded that AURA's proposed Materials and Subcontracts (Non-labor costs) were not current and supported. DCAA requested that AURA provide support for its proposed Materials and Subcontracts amounts for 16 significant WBS (work breakdown structure) items tested totaling over \$94 million. However, AURA did not provide current, accurate and complete cost data to support the reasonableness of its proposed cost for any of the sampled items. For many sampled items, AURA provided outdated vendor quotes obtained in 2004 with updates in 2006 and in 2008. AURA provided a "Basis of Estimate Overview" dated March 15, 2010, which states, "The ATST team intends to conduct competitive bidding to solicit fixed bids from qualified contractors for the major subsystems. These

subsystems include, amongst others, the Enclosure, the Telescope Mount Assembly, and the Main Mirror (M1) fabrication, polishing and handling fixture.” The Overview from AURA further states, “Since the costs listed in the initial proposal were estimates, the contractor bids will serve to validate those estimates...The first of these proposals sequences is planned for mid March, 2010.” DCAA concluded that, based on its review of the Cost Book Proposal submitted October 15, 2009, and the Basis of Estimate Overview dated March 15, 2010, fixed price bids from subcontractors are being solicited subsequent to the initial proposal submittal and NSF’s funding of this proposal.

For the remaining sampled items, AURA provided either no support or insufficient support and reconciliations to evaluate the reasonableness of the proposed costs. Further, for 14 of the 16 items tested totaling over \$75 million, AURA stated in its proposal that it escalated its base year costs to then-year costs by using a [REDACTED] percent annual escalation factor which was based in part on a selected OMB index of [REDACTED] percent to which AURA added a contingency factor of [REDACTED] percent ([REDACTED] of the total proposed annual escalation factor) to arrive at the [REDACTED] percent escalation factor. AURA did not show its calculations, however, so the auditors were unable to determine how AURA calculated its proposed then-year costs. Notwithstanding this inadequacy, DCAA noted that AURA’s proposed contingencies are unallowable per applicable OMB cost principles (2 CFR Part 230, Appendix B, Paragraph 9, Contingency Provisions). For the last two of the 16 items, totaling almost \$19 million, the proposed WBS costs were proposed as Material and Subcontracts, but were actually contingency costs. AURA could provide no support for the proposed contingency amounts, and DCAA again noted that AURA’s proposed contingencies are unallowable per 2 CFR Part 230. A discussion of each WBS sampled item is included in DCAA’s October 1, 2010 report.

**2. Direct Labor Estimates.** DCAA found that AURA’s proposed [REDACTED] in labor estimates tested do not include sufficient detail to perform an audit of these costs because labor hours and dollars are proposed in total covering numerous years. AURA was unable to provide support for the proposed labor hours. DCAA requires a time-phased breakdown of labor hours and costs along with supporting documentation for the number of hours proposed in order to adequately perform its audit.

**3. Indirect Costs.** DCAA found that AURA’s ATST proposal does not show how the proposed indirect costs were computed. AURA proposed its indirect costs in total covering numerous years, which does not provide sufficient detail for DCAA to perform an audit. The rates identified in AURA's proposal do not reconcile with the rates provided in the awardee’s Application of Indirect Rates in ATST Cost Estimate and Budget documentation. The awardee did not provide support (pool expenses and allocation base costs) for the rates provided in the proposal or Cost Estimate and Budget documentation. AURA also provided a draft indirect rate agreement letter from DCMA in support of an NSO Facilities and Administration (F&A) rate for the period October 1, 2008 to September 30, 2009. The auditor could not determine if this rate was used in the awardee’s proposal or cost estimate documentation. DCAA was unable to determine the rates AURA used because AURA’s proposal does not show how the proposed indirect rates were computed. The indirect costs were proposed in total as "Other" costs covering the entire performance period of the award. This does not provide sufficient detail for

DCAA to determine the reasonableness and adequacy of the proposed indirect rates. DCAA requires details showing the rates used, how they were applied, and the basis for the proposed rates with supporting documentation in order to adequately perform an audit of the indirect costs.

**4. Contingencies.** DCAA found that approximately 21 percent of the \$298 million total proposed costs (\$62 million) are included in the proposal as “contingencies.” Contingency provisions are unallowable per 2 CFR Part 230, Appendix B, Paragraph 9, Contingency Provisions, which states, “Contributions to a contingency reserve or any similar provision made for events the occurrence of which cannot be foretold with certainty as to time, intensity, or with an assurance of their happening, are unallowable.” These contingency costs are in addition to the undetermined amount of contingency escalation built into the material estimates detailed in paragraph 1 above.

This issue of an awardee proposing unallowable contingency costs in their budgets was also found in DCAA’s audit of Consortium of Ocean Leadership’s (COL) proposed budget for the Ocean Observatories Initiative, as reported in NSF OIG Audit Report No. OIG-10-1-012, dated September 30, 2010. COL also built \$88 million of contingency costs into its proposed budget, and DCAA questioned that proposed amount of contingencies in its entirety citing 2 CFR 230. In a written response, NSF raised concerns about the correctness of DCAA’s interpretation and application of the OMB regulations. DCAA responded to NSF’s concerns on November 30, 2010, affirming that its (DCAA’s) interpretation and application of the OMB regulations are correct. Further, DCAA stated in its response:

- While contingencies may be included in Government developed budgets, awardees are not allowed to include contingency costs in the proposal they submit to the Government per OMB Circular A-122, Appendix B, and NSF’s Proposal and Award Policies and Procedures Guide.
- There is a difference between Government estimates for budgeting purposes (wherein contingency costs are used to provide more realistic costs) and proposed costs (wherein OMB Circular A-122, Appendix B provides that contingency costs are unallowable).
- Awardees must comply with OMB Circular A-122 cost principles for non-profit organizations with respect to their pricing, administration, and settlement of awards; and there is no exception to how the applicable cost principles are determined for an awardee.

Based on DCAA’s response, NSF would need to internally control, and not award, contingency funds until a demonstrated need arises that is predicated on known events, the occurrence of which can be foretold with certainty as to time, intensity, and with an assurance of their happening. We have also attached the DCAA response to NSF to this transmittal letter.

#### **AURA’s Response**

In its response to DCAA’s inadequacy memorandum dated October 1, 2010, AURA did not specifically address or refute DCAA’s audit position on any of the noted deficiencies. However, a repeated point in AURA’s response to DCAA’s inadequacy memorandum is that NSF had reviewed and accepted its proposed costs and methodologies in its Preliminary Design Review held in October 2006 and again in the Final Design Review held in May 2009. AURA also

stated that, as a result of its experience on this proposal, it would develop and document new estimating policies and procedures. See AURA's attached response letter for its complete response to DCAA's inadequacy memorandum.

## Recommendations

We recommend that the NSF Director of the Division of Acquisition and Cooperative Support:

1. Request AURA to revise and resubmit an adequate ATST proposal based on current, accurate and complete cost data that is acceptable for auditing purposes. This revised proposal should include a detailed "basis of proposal" statement that explains the basis for all proposed costs; identifies the basis/rationale for all engineering estimates used in calculating proposed costs; and provides all reconciliations and calculations needed to arrive at proposed costs. AURA should also provide cost/price analysis for its proposed subcontracts showing the basis for establishing source and reasonableness of price.
2. Require AURA to remove unallowable contingency provisions from its proposed budgets for ATST and discontinue NSF's practice of funding contingencies. Instead, NSF should require its awardee to submit proposed budgets supported by auditable, current, accurate and complete cost data, request independent audits of the awardee's proposed budgets prior to funding, and base NSF funding on the results of audit.
3. Implement policies and procedures that require that NSF internally control, and not award, contingency funds until a demonstrated need arises that is predicated on known events the occurrence of which can be foretold with certainty as to time, intensity, and with an assurance of their happening.
4. Request DCAA to audit AURA's revised ATST proposal, and based on the results of audit, negotiate a revised award price with AURA.

In accordance with OMB Circular A-50, please coordinate with our office during the six-month resolution period to develop a mutually agreeable resolution of the findings. Also, the findings should not be closed until NSF determines that the recommendations have been adequately addressed and the proposed corrective actions have been satisfactorily implemented.

We are providing a copy of DCAA's inadequacy memorandums to the ATST Program Director and the Director of Large Facilities Projects. The responsibility for audit resolution rests with DACS. Accordingly, we ask that no action be taken concerning DCAA's inadequacy memorandum findings without first consulting DACS at (703) 292-8242.

## OIG Oversight of Audit

To fulfill our responsibilities under Government Auditing Standards, the Office of Inspector General:

- Reviewed DCAA's approach and planning of the audit;
- Evaluated the qualifications and independence of the auditors;
- Monitored the progress of the audit at key points;
- Coordinated periodic meetings with DCAA and NSF officials as necessary to discuss audit progress, findings and recommendations;
- Reviewed the inadequacy memorandums prepared by DCAA to ensure compliance with Government Auditing Standards and Office of Management and Budget Circulars; and
- Coordinated issuance of the DCAA inadequacy memorandums.

DCAA is responsible for the attached inadequacy memorandums and the conclusions expressed in them.

We thank you and your staff for the assistance extended to us. If you have any questions, please contact Jannifer Jenkins at (703) 292-4996 or David Willems at (703) 292-4979.

### Attachments:

1. DCAA Inadequacy Memorandum Letter No. 4301-2010B21000002, *NSF Request for Audit of the AURA Cost Book Proposal for the ATST*, dated October 1, 2010
2. DCAA Inadequacy Memorandum Letter No. 3761-2010B21000002, *NSF Request for Audit of the AURA Cost Book Proposal for the ATST*, dated March 22, 2010
3. *AURA Response to DCAA Inadequacy Memorandum Letter dated October 1, 2010*, dated October 18, 2010
4. *DCAA Response to National Science Foundation's Concerns Regarding Assignment Number 6171-2009J21000001*, (the Audit of the Consortium of Ocean Leadership Proposed Budget for the Ocean Observatories Initiative, OIG Report No. 10-1-012) dated November 30, 2010

cc: Martha Rubenstein, CFO and Director BFA  
Mary Santonastasso, Division Director, DIAS  
Craig Foltz, ATST Program Director, Division of AST  
Mark Coles, Director Large Facilities Projects, BFA/OAD  
Clifford Gabriel, Senior Advisor, OD