APRIL 30, 2012

AUDIT REPORT

OFFICE OF AUDITS

NASA'S USE OF RESEARCH ANNOUNCEMENT AWARDS FOR AERONAUTICS RESEARCH

OFFICE OF INSPECTOR GENERAL

National Aeronautics and
Space Administration

REPORT NO. IG-12-011 (ASSIGNMENT NO. A-11-013-00)

Final report released by:

Paul K. Martin
Inspector General

Acronyms

ARMD	Aeronautics Research Mission Directorate
FAR	Federal Acquisition Regulation
NRA	NASA Research Announcement
OMB	Office of Management and Budget

OVERVIEW

NASA'S USE OF RESEARCH ANNOUNCEMENT AWARDS FOR AERONAUTICS RESEARCH

The Issue

NASA's three Mission Directorates – Science, Human Exploration and Operations, and Aeronautics Research – support their research, development, and education efforts by awarding contracts, grants, and cooperative agreements through NASA Research Announcements (NRAs).[1] NASA's Federal Acquisition Regulation (FAR) Supplement defines an NRA as a solicitation for proposals that announces research interests in support of NASA programs and provides a formal mechanism for offerors to submit competitive research ideas.[2] NASA has used NRA awards to support human and robotic space missions, space observation and studies of the Earth and its climate, aeronautics research, and education and public outreach. From 2006 to 2010, NASA spent approximately $1.3 billion on NRA awards across all its Mission Directorates.

The Aeronautics Research Mission Directorate (ARMD) performs research to increase the capacity, efficiency, and flexibility of our national airspace and to address aeronautical noise, emissions, performance, and safety challenges. From May 2006 through January 2011, ARMD funded 447 NRA awards valued at $434.7 million – approximately one-third of the amount spent by NASA on NRA awards – to advance the Mission Directorate's aeronautics research and development goals.[3] Approximately $34.4 million was funded by the American Recovery and Reinvestment Act of 2009

[1] FAR Subpart 2.1 defines a contract as a mutually binding legal relationship that obligates the seller to furnish goods or services and the Government to pay for them. According to NASA's Grants and Cooperative Agreement Handbook, a grant is used to accomplish a NASA objective through stimulating or supporting the acquisition of knowledge or attempting to determine the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or techniques and advance the state of the art. According to 31 USC 6101, grants are distinguished from contracts in that grants provide financial assistance to the recipient to conduct a fairly autonomous program; contracts involve acquisition. A cooperative agreement is used when (1) the principal purpose is the transfer of anything of value to the recipient to accomplish an activity that has a public purpose and (2) NASA anticipates substantial involvement between the Agency and the recipient during performance of the activity. Grants are distinguished from cooperative agreements in that substantial involvement is not expected between NASA and the recipient when carrying out the activity.

[2] NASA FAR Supplement 1835.016-71, "NASA Research Announcements." An NRA differs from a Request for Proposals, which contains a statement of work or specification to which the proposer responds.

[3] For comparison, the Science Mission Directorate annually makes over 1,000 NRA awards, primarily in the form of grants, totaling approximately $200 million per year (less than 5 percent of the Directorate's annual budget).

(Recovery Act). For future years, ARMD plans an annual funding level of $75 million for NRA awards.

NASA FAR Supplement 1835.016-71, "NASA Research Announcements," defines an NRA as a solicitation that announces research interests in support of NASA's programs and provides a formal mechanism for corporations, universities, and research institutions to submit competitive project ideas. For example, a 2007 NRA solicitation funded research for simulation and testing of weather concepts that NASA will use in developing the Next Generation Air Transportation system. Another award under a 2006 solicitation funded research to develop concepts and computer code for the organization of airspace and changing airspace configurations for Next Generation Air Transportation system operations. NRA awards are typically for a 3-year period, but can be shorter or longer as needed.

We initiated this audit to examine whether the research funded by NRA awards, including awards funded by the Recovery Act, advanced NASA's aeronautics research goals and whether award costs were allowable and properly supported.

We reviewed documents from awards made by Ames Research Center, Dryden Flight Research Center, Glenn Research Center, Langley Research Center, and the NASA Shared Services Center. We selected a random sample of 43 awards between May 2006 and January 2011, including 7 Recovery Act–funded awards, with a total value of $50.9 million. We assessed 18 of these awards, including 4 funded by the Recovery Act, to determine whether technical results advanced NASA's aeronautics research, and we reviewed all 43 for cost allowability and support. Details of the audit's scope and methodology are in Appendix A.

Results

We found that NASA's aeronautics-related NRA awards, including awards funded by the Recovery Act, advanced the aeronautics research goals established by NASA. Specifically, the awards aligned with one or more goals set forth in ARMD project plans and, according to NASA technical experts, expanded the knowledge needed to advance those goals. However, we found that 18 of the 43 awards we reviewed (42 percent) contained approximately $2.4 million in questioned costs: $22,114 in unallowable fees and $2,405,635 in unsupported costs.[4] Based on our sample results, we estimate that ARMD's 447 NRA awards during this 5-year period contained $25.2 million in unallowable or unsupported costs. Moreover, we project that by addressing the deficiencies we identified NASA could avoid awarding approximately $3.6 million in unallowable and/or unsupported costs annually in ARMD NRA awards.[5]

[4] None of the 18 awards with questioned costs were funded by the Recovery Act.

[5] See Appendix C for details of our calculations for questioned costs and funds put to better use.

NRAs Advanced ARMD's Research Goals. We found that NRA awards advanced NASA's aeronautics research goals. Specifically, the awards we reviewed aligned with ARMD project goals within the Airspace System Program, Aviation Safety Program, Fundamental Aeronautics Program, and Integrated Systems Research Program. We considered an award to have advanced aeronautics research goals if it aligned with research goals contained in ARMD project plans and produced results in which (1) NASA received the product agreed to in the procurement instrument and (2) NASA officials stated that the product expanded the knowledge needed to advance research goals in ARMD project plans.

We reviewed proposals for 18 awards, including 4 funded by the Recovery Act, and found that the proposals aligned with one or more research goals described in NASA project plans.[6] For example, ARMD's Integrated Systems Research Program selected for award a proposal that will explore and mature unconventional aircraft designs with the potential to meet mid-term goals (5–10 years) for acceptable noise levels, fuel consumption, and nitrogen oxides emissions. This award aligned directly with the Mission Directorate's goal to reduce noise levels and harmful emissions over the next 20 years.

In addition, we found that each of the awards reviewed produced products such as written progress and final technical reports, software, hardware, and conference papers that ARMD officials said will advance the Mission Directorate's research goals. According to program officials, NRA awards have led to the development of sensors, computer codes and models, prototypes, and other products, including the following:

- A heat flux sensor and calibration technique that collects data on heat changes during high-temperature tests of advanced composite structures and thermal protection system panels. NASA officials said the Agency has successfully used two of these sensors to test body sections of a hypersonic vehicle.[7]

- Computer code for predicting airflow over aircraft structures that NASA used on a Space Shuttle flight in March 2009.

- A prototype tool that directly supports research analyzing safety cases to verify and validate systems that will be used in the Next Generation Air Traffic Management System.

Based on the findings for these 18 awards, we concluded that no further review of additional awards for alignment with project plans and goals was warranted.

NRA Awards Contained Unallowable and Unsupported Costs. We found that 18 of the 43 awards we reviewed (42 percent) included costs that were not allowable or were

[6] We took our sample for this aspect of the audit from our initial random sample of 43 awards.

[7] A hypersonic vehicle is capable of reaching speeds greater than five times the speed of sound.

not adequately supported (see Appendix B for a breakdown by award recipient of the costs we questioned).[8] Allowable costs are costs that meet criteria for inclusion in the contract, grant, or cooperative agreement and are reasonable in amount. For a cost to be adequately supported, NASA must obtain and document sufficient supporting information to determine that the cost is allowable, reasonable, and complies with the terms of the contract.

In our review of 43 awards, we identified the following unallowable or unsupported costs:

- **Unallowable Fees.** NASA awarded unallowable fees totaling $22,114 on 2 of the 43 (5 percent) NRA awards we reviewed. In one case, The Pennsylvania State University (Penn State) proposed a $12,590 fee that is expressly forbidden by the NASA FAR Supplement. In the procurement file documentation, the contracting officer acknowledged the prohibition on paying fees to universities, but justified the fee in this case on the ground that the proposal came from Penn State's Applied Research Laboratory rather than Penn State itself. The contracting officer asserted that the Laboratory is "functionally an independent arm of [Penn State] and, therefore, not subject to the FAR Supplement prohibition." However, because NASA awarded the contract to Penn State and not the Laboratory, and because, as the contracting officer acknowledged in the Price Negotiation Memorandum, the Laboratory's "financial and legal identity are inextricably woven to [Penn State], we question the allowability of the fee.

- **Unsupported Tuition Costs.** NASA awarded $589,895 on 12 of the 43 (28 percent) NRA awards in our sample without obtaining sufficient supporting information to determine whether proposed tuition costs were allowable. Tuition costs are allowable only if they meet specific requirements of Office of Management and Budget (OMB) Circular A-21, "Cost Principles for Educational Institutions," 2004, including whether "the costs proposed are reasonable for the work performed."[9] The procurement files for these 12 awards contained no evidence that NASA procurement officials had assessed proposed tuition costs for reasonableness and compliance with the other requirements of OMB Circular A-21. For example, we found that NASA awarded Georgia Tech Research Corporation $26,208 to fund 100 percent of the tuition costs for two graduate students. However, the Corporation's budget proposal did not identify the students' degree programs or provide support for the amount of tuition proposed. Indeed, the technical proposal stated that the students would provide only

[8] Of the 43 awards, 7 were Recovery Act–funded; of those 7, none contained questioned costs.

[9] OMB Circular A-21, Section J.45, "Scholarships and student aid costs," states that tuition costs are allowable provided that (1) the individual is conducting activities necessary to support the agreement; (2) tuition costs and support are in accordance with the institution's policies; (3) the student is enrolled in a degree program and the program is related to the Federally sponsored research project; (4) the costs proposed are reasonable for the work performed; and (5) the institution similarly compensates students in other activities.

one-third of their time and effort to the NASA-sponsored agreement. Despite this clear statement, there is no evidence that NASA procurement personnel considered whether this ratio was consistent with the educational institution's policy, whether the institution similarly compensated students for other activities, or whether the proposed cost was otherwise reasonable for the work that the students were expected to perform.

- **Other Unsupported Costs.** NASA awarded $1,815,740 on 6 of the 43 (14 percent) NRA awards in our sample without obtaining sufficient supporting information to determine that these costs were fair and reasonable. NASA policy establishes requirements for adequately documenting proposed costs, including a requirement for documentation of itemized budgets for all subcontracts.[10] In 2007 NASA awarded a contract valued at $1,283,077 to a university, $962,753 (75 percent) of which was for subcontract costs. However, the university did not provide, and NASA procurement officials did not request, itemized budgets detailing how the subcontract funds would be spent. Absent itemized budgets, procurement officials did not have a basis for assessing the reasonableness of proposed subcontract costs.

We found that the NRA awards we examined contained unallowable and unsupported costs because procurement officials did not perform adequate due diligence in reviewing costs proposed by NRA awardees. Furthermore, NASA's "Guidebook for Proposers Responding to a NASA Research Announcement (NRA) or Cooperative Agreement Notice (CAN)," January 2012, does not adequately address the documentation proposers should submit to support proposed tuition costs.

Based on our statistical projections, we estimate that NASA awarded aeronautics-related NRA contracts and cooperative agreements that contained $25.2 million in unallowable and unsupported costs from May 2006 through January 2011. For future years, we estimate that by addressing the type of deficiencies we identified NASA could avoid awarding approximately $3.6 million of unallowable and/or unsupported costs annually in ARMD NRA awards.

Management Action

In an effort to ensure that all costs in NRA awards are allowable and properly supported, we recommended that the Assistant Administrator for Procurement provide additional training to NASA procurement personnel regarding the prohibition on fees to educational institutions and the requirement for documenting cost elements such as subcontracts and tuition for students. We also recommended that the Assistant Administrator revise the

[10] The NASA policy requiring itemized budgets for subcontracts is found in the January 2006 edition of the Agency's "Guidebook for Proposers Responding to a NASA Research Announcement (NRA)," section 2.3.11(a), "Description of Required Budget Justification and Details."

Guidebook for NRA Proposers to make clear the documentation required to support proposed student tuition costs.

In response to a draft of this report, the Assistant Administrator for Procurement partially concurred with our recommendations, stating that he agrees with our findings regarding the lack of adequate documentation to support the analysis of award proposals and believes our review of the pre-award process will help NASA improve its internal controls. However, he took exception with some of the analysis and conclusions that led to our recommendations. Specifically, the Assistant Administrator stated that inadequate documentation and analysis of costs during the pre-award stage does not necessarily mean that NASA actually paid unallowable costs. Additionally, the Assistant Administrator stated that we mischaracterized NASA's handling of the fee proposed by Penn State, pointing out that the contracting officer refused to make an award that included the fee and that the proposal was subsequently revised. He also asserted that extrapolating the questioned costs in the finding – in particular the Penn State fee – over the broader universe of NRA awards is unsupported.

Our report makes no judgment on whether NASA actually paid unallowable or unsupported costs. Rather, we based our recommendations on the finding that procurement officials did not make sufficient efforts – prior to making an award – to obtain the support necessary to determine whether proposed costs were reasonable. As such, we based our monetary projections solely on the questioned costs found in our sample and extrapolated the results to illustrate the potential impact associated with procurement officials failing to conduct adequate pre-award analysis. Regarding the Penn State fee, we maintain that NASA awarded the contract without adequate support for the proposed cost elements. Specifically, the revised proposal increased labor (and associated fringe benefit costs) and travel costs by an amount equivalent to the unallowable fee, thereby retaining a total contract price of $200,000, and did not include an expanded scope of work justifying the increased labor and travel costs. Moreover, the $9,524 Penn State fee in question represents only 0.4 percent of the $2.4 million of questioned costs in our sample (see discussion on page 8).

With regard to the specific recommendations, the Assistant Administrator stated that his office has developed and scheduled two training courses for cost and price analysis and will review and revise the annual Guidebook for NRA Proposers as needed to ensure that proposers provide the necessary documentation for procurement officials to determine the reasonableness of tuition costs. We find the Assistant Administrator's proposed actions responsive to the intent of our recommendations and therefore we will close the recommendations upon completion and verification of the proposed actions. Management's complete comments are reprinted in Appendix D.

CONTENTS

INTRODUCTION
Background _____ 1
Objectives _____ 3

RESULTS
NRA Awards Advanced ARMD's Research Goals_____ 4
NRA Awards Contained Unallowable and Unsupported Costs____ 6

APPENDIX A
Scope and Methodology_____ 13
Review of Internal Controls _____ 14
Prior Coverage _____ 15

APPENDIX B
Review of Award Costs_____ 16

APPENDIX C
Sampling Methodology and Projection of Results _____ 19

APPENDIX D
Management Comments _____ 21

APPENDIX E
Report Distribution_____ 24

INTRODUCTION

Background

NASA's three Mission Directorates – Science, Human Exploration and Operations, and Aeronautics Research – support their research, development, and education efforts by awarding contracts, grants, and cooperative agreements through NASA Research Announcements (NRAs).[11] NASA's Federal Acquisition Regulation (FAR) Supplement defines an NRA as a solicitation for proposals that announces research interests in support of NASA programs and provides a formal mechanism for offerors to submit competitive research ideas.[12] NASA has used NRAs to support efforts in human and robotic space missions, space observation and studies of the Earth and its climate, aeronautics research, and education and public outreach. From 2006 to 2010, NASA spent approximately $1.3 billion on NRA awards by all its Mission Directorates.

The Aeronautics Research Mission Directorate (ARMD) performs research to increase the capacity, efficiency, and flexibility of our national airspace and to address noise, emissions, efficiency, performance, and safety challenges. For the past 5 years, the ARMD Airspace Systems Program, Aviation Safety Program, Fundamental Aeronautics Program, and Integrated Systems Research Program have used NRA awards to (1) generate advanced research ideas that further NASA's goals and objectives; (2) stimulate close collaboration among NASA researchers and NRA award recipients; and (3) supplement and enhance ARMD's in-house capabilities.

In 2006, the National Research Council reported that without input from academia and industry, NASA's aeronautics research might suffer from a lack of specialized technical expertise, facilities, and capabilities.[13] Accordingly, the Council recommended that NASA establish a more balanced allocation of funding between in-house and external organizations.

[11] A contract is a mutually binding legal relationship that obligates the seller to furnish goods or services and the Government to pay for them. A grant is used to accomplish a NASA objective through stimulating or supporting the acquisition of knowledge or attempting to determine the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or techniques and advance the state of the art. Grants are distinguished from contracts in that grants provide financial assistance to the recipient to conduct a fairly autonomous program; contracts involve acquisition. A cooperative agreement is used when (1) the principal purpose is the transfer of anything of value to the recipient to accomplish an activity that has a public purpose and (2) NASA anticipates substantial involvement between the Agency and the recipient during performance of the activity. Grants are distinguished from cooperative agreements in that substantial involvement is not expected between NASA and the recipient when carrying out the activity.

[12] NASA FAR Supplement 1835.016-71, "NASA Research Announcements." An NRA differs from a Request for Proposals, which contains a statement of work or specification to which the proposer responds.

[13] National Research Council, "Decadal Survey of Civil Aeronautics: Foundation for the Future," 2006.

In line with the Council's recommendation, ARMD senior officials restructured ARMD's programs and projects to focus on long-term, cutting-edge research. Consistent with this new focus, research would pursue lower technology readiness levels that generally do not involve the production of a prototype or include flight-testing.[14] In addition, ARMD committed to spending at least $50 million annually on contracts and cooperative agreements competitively selected through NRAs. ARMD issued its initial NRA solicitation in May 2006.

From May 2006 through January 2011, ARMD funded 447 awards valued at $434.7 million – approximately 33 percent of the $1.3 billion that NASA spent on NRA awards – to advance the Mission Directorate's aeronautics research and development goals. Approximately $34.4 million of the $434.7 million was funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act).[15] For future years, ARMD plans an annual NRA funding level of $75 million.

NRA Process within ARMD

ARMD administers NRA awards through a four-stage process: solicitation, evaluation and selection, award, and post-award administration. We describe each of these stages below:

- **Solicitation:** ARMD issues the NRA solicitation, which includes guidance regarding requirements and cost evaluation criteria for that program year. Generally, proposals are required to include a description of the offeror's research idea and technical approach, identification of principal researchers, and a proposed budget.

- **Evaluation and Selection:** ARMD competitively evaluates proposals through a peer review process involving a panel of at least three reviewers with technical expertise in the area of the proposal. The evaluation considers the proposal's overall scientific or technical merit, its innovative approaches, the proposer's capabilities, and the capabilities of key personnel involved in the proposed research. Based on the panel's evaluations, a NASA official selects proposals for award.

- **Award:** Based on the nature of the research, the contracting officer chooses the appropriate procurement instrument (contract or cooperative agreement), negotiates with the proposer, and finalizes the award. Agency policy permits the use of grants, but ARMD awarded only contracts and cooperative agreements for

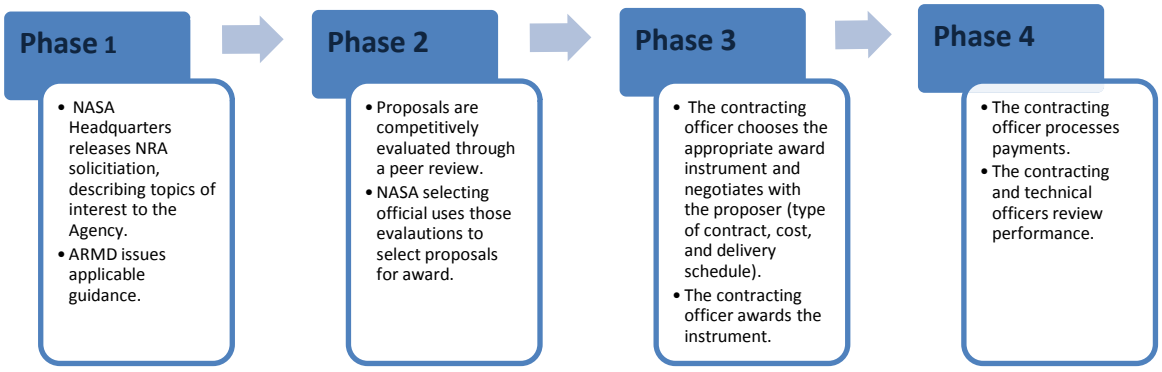
[14] Technology readiness level is a scale that measures the maturity of a technology ranging from 1 (basic technology research) to 9 (systems test, launch, and operations).

[15] The Act stipulates that Recovery Act funds are to be used for technological advances in science and requires a significant level of transparency and accountability to ensure that funds are expended appropriately and to make information about expenditures readily available to the public.

proposals selected through NRA solicitations during the period of our review. Awards are typically for a 3-year period of performance, but may be shorter or longer as needed.

- **Post-Award Administration:** During this period, NASA contracting and technical officers monitor recipient performance and process payments.

The following chart illustrates the NRA process.



Objectives

Our overall audit objective was to examine whether ARMD-funded NRAs advanced NASA's aeronautics research goals and whether associated costs were allowable and properly supported. See Appendix A for details of the audit's scope and methodology, our review of internal controls, and a list of prior coverage. See Appendix B for details about our sample and Appendix C for details about our sampling methodology and projection of results.

NRA AWARDS ADVANCED ARMD'S RESEARCH GOALS

We found that NRA awards advanced NASA's aeronautics research goals. Specifically, the awards we reviewed aligned with ARMD project goals within the Airspace System Program, Aviation Safety Program, Fundamental Aeronautics Program, and Integrated Systems Research Program. We considered an award to have advanced aeronautics research goals if it aligned with research goals contained in ARMD project plans and produced results in which (1) NASA received the product agreed to in the procurement instrument and (2) NASA officials stated that the product expanded the knowledge needed to advance research goals in ARMD project plans.

Evaluation of NRA Awards Relative to ARMD Project Plans

We selected 18 awards for review, including 4 funded by the Recovery Act.[16] We found that the proposals for all 18 awards aligned with one or more research goals described in NASA project plans. For example, ARMD's Integrated Systems Research Program selected for award a proposal that will mature unconventional aircraft designs with the potential to meet mid-term goals (5–10 years) for acceptable noise levels, fuel consumption, and nitrogen oxides emissions. The project also proposed to develop a conceptual design for a subscale vehicle for flight tests. This award aligned directly with the Mission Directorate's goal to reduce noise levels and harmful emissions over the next 20 years. Similarly, one of the Recovery Act awards aligned with another goal to reduce some nitrogen oxides emissions by at least 75 percent below the current standard while simultaneously decreasing the amount of fuel an aircraft uses by 40 percent.

In addition, we found that each of the awards reviewed produced products such as written progress and final technical reports, software, hardware, and conference papers that ARMD officials said will advance the Mission Directorate's research goals. According to program officials, NRA awards have led to the development of sensors, computer codes and models, prototypes, and other products, including the following:

- A heat flux sensor and calibration technique that collects data on heat changes during high-temperature tests of advanced composite structures and thermal protection system panels. NASA officials stated that the Agency has successfully used two of these sensors to test body sections of a hypersonic vehicle.[17]

[16] We took our sample for this aspect of the audit from our initial random sample of 43 awards.

[17] A hypersonic vehicle is capable of reaching speeds greater than five times the speed of sound.

- Computer code for predicting airflow over aircraft structures that NASA used on a Space Shuttle flight in March 2009.

- Computer code to predict engine performance in an effort to achieve significant reductions in aircraft fuel consumption and noise.

- A prototype that, according to NASA technical personnel, shows potential for automating aspects of hazard analysis and contributes to the research goal of developing improved methods for articulating and implementing safety requirements.

- A prototype tool that directly supports research analyzing safety cases to verify and validate systems that will be used in the Next Generation Air Traffic Management System.

Based on our findings for these 18 awards, we concluded that no further review of additional awards for alignment with project plans and goals was warranted.

NRA AWARDS CONTAINED UNALLOWABLE AND UNSUPPORTED COSTS

Our review of a sample of NRA awards found 18 of 43 contained unallowable fees or unsupported tuition, subcontract, or equipment costs totaling approximately $2.4 million. Based on our sample results, we estimate that NASA awarded $25.2 million in unallowable or unsupported costs to NRA recipients from inception of ARMD's NRA program in May 2006 through January 2011. This occurred because proposals did not contain the documentation required for procurement officials to determine whether proposed tuition costs were allowable and procurement officials did not perform adequate due diligence when reviewing proposed costs. By implementing the recommendations identified in this report, the Agency can avoid awarding unallowable and unsupported costs in ARMD NRA awards of approximately $3.6 million annually.

Federal and NASA Requirements for the Allowability of Costs

FAR Requirements for Contracts. FAR 31.201-2, "Determining allowability," provides that a cost is allowable only when it is reasonable, allocable, and conforms to generally accepted accounting principles and practices appropriate to the circumstances, the terms of the contract, and any limitations set forth in FAR Subpart 31.2.[18] A cost is reasonable if it does not exceed the amount that a prudent person would pay under similar circumstances in the conduct of competitive business and is allocable if it provides benefits or bears an equitable relationship to the award.

FAR 1.602, "Contracting officers," provides that "no contract shall be entered into unless the contracting officer ensures that all requirements of law, executive orders, regulations, and all other applicable procedures . . . have been met." To ensure compliance with acquisition regulations, contracting officers must review proposed costs for allowability.

Office of Management and Budget (OMB) Requirements for Grants, Contracts, and Other Agreements with Educational Institutions. OMB Circular A-21, "Cost Principles for Educational Institutions," 2004, provides "principles for determining the costs applicable to research and development, training, and other sponsored work performed by colleges and universities under grants, contracts, and other agreements with the Federal Government. These agreements are referred to as sponsored agreements."[19]

[18] FAR 31.201-4, "Determining allocability," states that a "cost is allocable if it is assignable or chargeable to one or more cost objectives on the basis of relative benefits received or other equitable relationship."

[19] A sponsored agreement is any grant, contract, or other agreement between the institution and the Federal government.

Furthermore, Section J.45, "Scholarships and student aid costs," states that

> a. Costs of scholarships, fellowships, and other programs of student aid are allowable only when the purpose of the sponsored agreement is to provide training to selected participants and the charge is approved by the sponsoring agency. However, tuition remission and other forms of compensation paid as, or in lieu of, wages to students performing necessary work are allowable provided that --
>
> (1) The individual is conducting activities necessary to the sponsored agreement;
>
> (2) Tuition remission and other support are provided in accordance with established educational institutional policy and consistently provided in a like manner to students in return for similar activities conducted in nonsponsored as well as sponsored activities; and
>
> (3) During the academic period, the student is enrolled in an advanced degree program at the institution or affiliated institution and the activities of the student in relation to the Federally-sponsored research project are related to the degree program;
>
> (4) the tuition or other payments are reasonable compensation for the work performed and are conditioned explicitly upon the performance of necessary work; and
>
> (5) it is the institution's practice to similarly compensate students in nonsponsored as well as sponsored activities.
>
> b. Charges for tuition remission and other forms of compensation paid to students as, or in lieu of, salaries and wages shall be subject to the reporting requirements stipulated in Section J.10, and shall be treated as direct or F&A [facilities and administrative] cost in accordance with the actual work being performed. Tuition remission may be charged on an average rate basis.

NASA Requirements for all NRA Awards. NASA's annual "Guidebook for Proposers Responding to A NASA Research Announcement (NRA) or Cooperative Agreement Notice (CAN)," (Guidebook for NRA Proposers) establishes specific Agency policies regarding the allowability of individual cost elements included in an NRA budget proposal.[20] The Guidebook also establishes documentation requirements for adequately supporting proposed cost elements.

NRA Awards Contained Unallowable and Unsupported Costs

We found that approximately 42 percent of the NRA awards we reviewed (18 of 43) contained unallowable or unsupported costs, or both (see Appendix B for a breakdown by award recipient of the costs we questioned).[21]

[20] The January 2012 edition is located at http://www.hq.nasa.gov/office/procurement/nraguidebook/proposer2012.pdf (accessed April 27, 2012).

[21] We found no unallowable or unsupported costs in the Recovery Act-funded awards we reviewed.

Specifically, our review identified:

- unallowable fees ($22,114);
- unsupported tuition costs ($589,895); and
- other unsupported costs ($1,815,740).

Unallowable Fees. In 2010, NASA awarded a $414,380 contract to Pennsylvania State University for work titled "High Fidelity CFD Analysis and Validation of Rotorcraft Gear Box Aerodynamics," which included an unallowable fee of $12,590. In the Price Negotiation Memorandum, the contracting officer acknowledged the prohibition on paying such fees, but justified the fee in this case on the grounds that Penn State's Applied Research Laboratory, as opposed to Penn State, had submitted the technical proposal.[22] The contracting officer asserted that the Laboratory is "functionally an independent arm of [Penn State] and, therefore, not subject to the FAR Supplement prohibition."

We believe the contracting officer's rationale for allowing the fee is invalid for two reasons. First, NASA awarded the contract to Penn State, not the Laboratory. Second, as the contracting officer acknowledged in the Price Negotiation Memorandum, the Laboratory's "financial and legal identity are inextricably woven to [Penn State]." Accordingly, we do not believe the Laboratory can properly be viewed as an independent entity.

In another case, in 2008 NASA awarded a $200,000 contract to Penn State for work titled, "Rotorcraft Transmission Noise Path Model, Including Distributed Fluid Film Bearing Impedance Modeling." The contract file contains correspondence showing that procurement officials determined that Penn State's initial budget proposal included an unallowable fee of $9,524. However, rather than eliminating the fee and offering to pay Penn State $190,476 for the work, a NASA procurement official sent the following e-mail:

> If the fee you've proposed is really an overhead item, please provide us with a revised cost [budget] proposal that identifies it as overhead and we can proceed. We share your desire to get this effort awarded as soon as possible.

In response to this e-mail, Penn State submitted a revised budget proposal that eliminated the fee but increased labor (and associated fringe benefit costs) and travel costs by an equivalent amount, thereby retaining a total contract price of $200,000. However, the revised proposal did not include an expanded scope of work justifying the increased labor and travel costs, and NASA awarded the contract without further review of the proposed

[22] A Price Negotiation Memorandum is a required document in NASA procurement files. The NASA FAR Supplement states that the memorandum "serves as a detailed summary of: the technical, business, contractual, pricing (including price reasonableness), and other elements of the contract negotiated; and the methodology and rationale used in arriving at the final negotiated agreement."

cost elements. Accordingly, it appears to us that Penn State reclassified the unallowable fee as labor and travel costs and that NASA accepted this reclassification without additional inquiry or a sufficient basis. NASA procurement officials acknowledged to us that the approaching end of the fiscal year and the need to obligate funds was a factor in their desire to award the contract expeditiously.

Although we understand that NASA could not require Penn State to accept a lower contract price, we believe the Agency should have inquired further into the basis for the revised proposal to ensure that it was not simply paying the unallowable fee in another form. Accordingly, we question $9,524 of this NRA award.

Unsupported Tuition Costs. NASA awarded $589,895 on 12 of the 43 (28 percent) NRA awards in our sample without sufficient information to determine that proposed tuition costs were allowable. Tuition costs are allowable only if they are reasonable in amount and meet all of the other specific requirements of OMB Circular A-21, Section J.45.

For example, in 2006, NASA entered into a 3-year cooperative agreement worth $321,396 with the University of Rhode Island. The agreement included $56,926 to cover 100 percent of the out-of-state tuition costs for one graduate student. However, the University's budget proposal did not contain sufficient information to allow NASA procurement officials to determine whether the proposed tuition costs were allowable under Circular OMB Circular A-21. For example, the University did not identify the student's degree program or provide a letter from the registrar or other documentary support for the tuition costs claimed, and NASA procurement officials did not request or otherwise obtain this information. Instead, procurement officials said they compared the proposed tuition costs to similar costs on two other NASA awards. However, the procurement file did not contain evidence of the comparison or a description of the results.

In another example, in 2008, NASA awarded a cooperative agreement to the University of Cincinnati valued at $590,578 for work titled, "Computational Bleed Model for Supersonic Inlets." The agreement included $73,832 to cover the in-state tuition costs of two graduate students. However, the University's budget proposal did not identify the students' degree programs or the percentage of effort the students would provide to the NASA-sponsored research agreement or provide support for the amount of tuition costs claimed, and NASA procurement officials did not request any additional supporting information from the University.

In a final example, in 2007, NASA awarded a 3-year contract to Georgia Tech Research Corporation for work titled "Characterization of and Concepts for Metroplex Operations." The award included $26,208 to fund 100 percent of the tuition costs for two graduate students. However, the technical proposal stated that the students would provide only one-third of their time and effort to the NASA-sponsored agreement. Moreover, the Corporation's budget proposal did not identify the students' degree programs or provide support for the proposed tuition costs, and there is no evidence that

NASA procurement personnel considered whether it was consistent with the Corporation's policy and otherwise reasonable to charge full tuition costs for students who would only be dedicating one-third of their time to the NASA project.

Other Unsupported Costs. NASA awarded $1,815,740 on 6 of the 43 (14 percent) NRA awards in our sample without obtaining sufficient supporting information to determine that these costs were fair and reasonable.[23] NASA policy establishes requirements for adequately documenting proposed costs. However, we found that ARMD awards did not consistently comply with this policy.

For example, NASA policy requires itemized budgets for all subcontracts.[24] In 2007, NASA awarded a $1,283,077 contract to San Jose State University for work titled "Human Workload Fast-time Integration." Of this amount, 75 percent or $962,753 was for subcontract costs. However, the State University did not provide, and NASA procurement officials did not request, itemized budgets detailing how the subcontract funds would be spent. Without these itemized budgets, procurement officials did not have a basis for assessing the reasonableness of proposed subcontract costs.

In a separate matter in 2007, NASA awarded a $608,075 cooperative agreement to Tao of Systems Integration, Inc. Based on our review of the procurement file and discussion with the contracting officer, we found no evidence that procurement officials took appropriate steps to ensure that proposed costs were reasonable prior to making the award. Specifically, the procurement file did not contain a Price Negotiation Memorandum or other evidence that procurement officials reviewed specific cost elements. Instead, procurement officials relied on a brief cost evaluation performed by NASA technical personnel. According to the FAR, the contracting officer is responsible for evaluating the proposed price and for ensuring that the final agreed-to price is fair and reasonable.[25] In our opinion, the abbreviated cost evaluation performed by technical personnel was insufficient to determine reasonableness of individual cost elements.

In another example, in 2010, NASA awarded a 2-year contract to Penn State valued at $414,380 for work titled "High Fidelity CFD Analysis and Validation of Rotorcraft Gear Box Aerodynamics." The contract awarded equipment costs of $19,939 to acquire four identical rack mount servers. However, the contract file contained no evidence that procurement officials requested or otherwise obtained objective evidence supporting the amount of the proposed cost before NASA awarded the contract. Therefore, we questioned the cost of the four servers and associated indirect costs of $10,887.

[23] One of the 10 awards without sufficient supporting information also contained an expressly unallowable contractor fee and was one of the two awards previously discussed.

[24] The NASA policy requiring itemized budgets for subcontracts is found in the January 2006 edition of the Agency's "Guidebook for Proposers Responding to a NASA Research Announcement (NRA)," section 2.3.11(a), "Description of Required Budget Justification and Details."

[25] FAR 15.404-1, "Proposal analysis techniques."

After we brought this issue to management's attention, NASA procurement personnel verified the accuracy of the proposed equipment costs with the manufacturer. However, such post-award verification is not an adequate substitute for pre-award diligence and determination that proposed costs are supportable.

Conclusion

NASA awarded contracts and cooperative agreements with unallowable and unsupported costs because procurement officials did not exercise adequate due diligence when reviewing proposed costs. Specifically, procurement officials did not obtain, review, and document sufficient evidence to provide a basis for assessing the reasonableness and thus the allowability of costs. Additionally, NASA has not described the documentation that proposers should submit to support proposed tuition costs in accordance with the requirements of OMB Circular A-21.

We projected our sample results onto the universe of 447 ARMD NRA awards valued at $434.7 million for the 5-year review period. Based on that projection, we estimate that NASA awarded contracts and cooperative agreements containing $25.2 million in unallowable and unsupported costs from May 2006 through January 2011. Specifically, we estimate that NASA awarded NRA contracts and cooperative agreements containing:

- unallowable fees of $230,000;
- unsupported tuition costs of $6.1 million; and
- other unsupported costs of $18.9 million.

We further estimate that NASA could avoid awarding approximately $3.6 million of unallowable and unsupported costs annually in ARMD NRA awards by addressing the deficiencies we found in our sample and taking steps to ensure that procurement officials exclude such unallowable and unsupported costs from future NRA awards.[26]

Details about questioned costs in our sample are in Appendix B. Details about our sampling methodology and projection of results are in Appendix C.

[26] Our projection is based on ARMD's plans for an annual funding level of $75 million for NRA awards.

Recommendations, Management's Response, and Evaluation of Management's Response

To help ensure that future NRA awards contain only allowable and supportable costs, we made the following recommendations to the Assistant Administrator for Procurement:

Recommendation 1. Provide training to procurement personnel regarding the prohibition on fees to educational institutions and the requirements for documenting cost elements such as subcontracts and tuition. The training should specify appropriate corrective actions when procurement personnel identify unallowable fees and ensure that procurement personnel understand the need to have a reasonable basis for assessing the allowability of proposed costs.

Management's Response. The Assistant Administrator partially concurred, stating that although he does not agree with portions of the analysis and conclusions that led to our recommendation, his office has scheduled training from April through July 2012 that will cover cost reasonableness determinations, documentation, and tools for analyzing proposed cost elements. As part of his response, the Assistant Administrator provided us slides of the planned training presentations.

Evaluation of Management's Response. Management's actions meet the intent of the recommendation and therefore the recommendation is resolved. We reviewed the training slides and confirmed that the information covers analysis of fees, the prohibition on paying fees to educational institutions, and properly documenting analysis of each cost element, including subcontracts. Furthermore, management offered to add a discussion of the allowability rules contained in OMB Circular A-21 and FAR 31 if we thought it necessary. We will close the recommendation following the addition of this information and completion of the scheduled training.

Recommendation 2. Revise the annual Guidebook for NRA Proposers to require proposers to submit the specific documentation needed to meet the tuition allowability requirements of OMB Circular A-21, Section J.45.

Management's Response. The Assistant Administrator partially concurred. Although he does not agree with portions of the analysis and conclusions that led to the recommendation, he stated that his office will complete a review and make revisions to the Guidebook by February 2013 to ensure that procurement officials receive the proper documentation to determine whether proposed tuition costs comply with criteria in the OMB Circular.

Evaluation of Management's Response. Management's proposed actions meet the intent of the recommendation and therefore the recommendation is resolved and will be closed upon completion and verification of the proposed actions.

APPENDIX A

Scope and Methodology

We performed this audit from March 2011 through March 2012 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 the objectives. We believe that the evidence obtained during this audit provides a reasonable basis for our findings and conclusions based on our objectives.

We limited the scope of our review to the contract award and the post-award administration stages because we assessed them as the most vulnerable to fraud, waste, and abuse. We did not review the other stages.

To meet our audit objectives, we selected a statistically determined sample of 43 ARMD NRA awards from inception of the program in May 2006 through January 31, 2011. The sample consisted of contracts and cooperative agreements that were awarded by Ames Research Center, Dryden Research Center, Glenn Research Center, Langley Research Center, and the NASA Shared Services Center. We reviewed the first 18 awards to determine whether awards advanced ARMD's research goals and produced meaningful results. We found that 4 of the first 18 awards were funded by the Recovery Act. We reviewed those 4 awards to assess effective and economical fund use and compliance with Recovery Act requirements.[27] We reviewed all 43 awards for cost allowability. Details of the audit's sampling methodology are provided in Appendix C.

We considered an award to advance NASA's research goals when (1) NASA received the deliverable agreed to in the procurement instrument and (2) NASA technical personnel found the deliverable expanded the knowledge needed to advance research goals set forth in ARMD project plans. For the 18 awards, we performed the following procedures:

- obtained project plans and milestones (if available) and interviewed technical personnel to understand the scope of research goals;
- interviewed technical personnel to confirm that NRA awards aligned with project plans' research goals;
- compared research described in project plans with research described in awards;

[27] Our sample of 43 awards included 7 that were funded by the Recovery Act, including these 4; we reviewed all 7 and found that none contained questioned costs.

- reviewed products, progress reports, and performance reports and interviewed NASA technical personnel who assessed performance; and

- corroborated testimony and personal observations with users, project officials, and independent sources.

To assess whether ARMD spent Recovery Act funds effectively and economically, we reviewed the four Recovery Act-funded awards to determine whether:

- the awards met requirements for funded research stated in the Recovery Act;

- the awards advanced research goals defined in ARMD project plans; and

- the awards contained properly supported and allowable costs.[28]

To assess whether NASA awarded costs that were allowable and properly supported, we reviewed a statistically selected sample of 43 awards and performed the following procedures:

- reviewed regulations governing the allowability of costs, including the FAR, OMB Circulars, and NASA policies;

- interviewed ARMD management officials and Agency procurement officials to identify procedures for reviewing and awarding costs; and

- reviewed procurement files to assess whether costs were allowable and properly supported.

Use of Computer-Processed Data. To meet our audit objectives, we relied on data obtained from ARMD's NRA Award Tracking System as the basis for our audit sampling. To assess the reliability of the data, we compared information from the Award Tracking System to procurement records. We concluded that the data was sufficiently valid and reliable to support our audit conclusions.

Review of Internal Controls

We assessed internal controls using guidance from OMB Circular A-123, "Management's Responsibility for Internal Control," December 21, 2004, and the Government Accountability Office's "Standards for Internal Control in the Federal Government," November 1999, and "Internal Control Management and Evaluation Tool," August 2001. Circular A-123 defines five control standards and requires that management comply with those standards. The Evaluation Tool provides managers

[28] We reviewed all 7 Recovery Act-funded awards to determine whether they contained properly supported and allowable costs.

guidance to implement the control standards and to determine whether improvements are needed.

Our assessment of internal controls indicates that the control system gives management adequate assurance of effectively using NRA awards to advance aeronautics research goals. The assessment found no indicators of deficiencies in the control environment, risk assessment, information and communications, and monitoring mechanisms as they relate to NRA awards.

However, we found a deficiency in control activities that are used to assess proposed costs. Specifically, control activities did not prevent the award of unallowable and unsupported costs. We discuss the deficiency in our report finding, "NRA Awards Contained Unallowable and Unsupported Costs." Our recommendations, if implemented, will correct the identified deficiencies.

Prior Coverage

During the last 5 years, neither the NASA Office of Inspector General nor the Government Accountability Office has issued a report concerning the use of NRAs. However, the National Research Council has issued two reports of particular relevance to the subject of this report:

"NASA Aeronautics Research: An Assessment" (2008)

"Decadal Survey of Civil Aeronautics: Foundation for the Future" (2006)

REVIEW OF AWARD COSTS

Sample Item	NRA Award Recipient	Award Total	Unallowable Fees	Unsupported Tuition Costs	Other Unsupported Costs	Total Questioned Costs
1	University Of Tennessee	$1,527,072	-	$29,678	-	$29,678
2	Boeing Company, The	137,652	-	-	-	-
3	University of Minnesota	525,000	-	58,703[a]	4,485	63,188
4	Pennsylvania State University	200,000	$9,524	-	-	9,524
5	Raytheon Intelligence and Information	866,021	-	-	-	-
6	Pratt & Whitney	993,829	-	-	-	-
7	University of Illinois at Urbana-Champaign	645,559	-	-	-	-
8	Metron Aviation, Inc.	1,549,855	-	-	-	-
9	Tao of Systems Integration, Inc.	608,075	-		608,075-	608,075
10	Pennsylvania State University	617,797	-	85,336		85,336
11	University of Cincinnati	590,578	-	73,832	-	73,832
12	Metron Aviation, Inc.	1,999,993	-	-	-	-
13	University of Massachusetts	98,415	-	-	-	-
14	Ohio Aerospace Institute	235,331	-	-	-	-
15	Boeing Co.	867,437	-	-	-	-
16	Lockheed Martin Corp.	2,987,645	-	-	-	-
17	General Electric	6,486,900	-	-	-	-

Sample Item	NRA Award Recipient	Award Total	Unallowable Fees	Unsupported Tuition Costs	Other Unsupported Costs	Total Questioned Costs
18	University of Michigan	697,825	-	57,517		57,517
19	Intelligent Automation, Inc.	360,000	-	9,209		9,209
20	Pratt & Whitney	7,354,981	-	-	-	-
21	Georgia Tech Research Corp.	1,698,174	-	26,208		26,208
22	University of Rhode Island	321,396	-	56,926	-	56,926
23	Sensis Corp.	1,208,024	-	-	-	-
24	San Jose State University	1,283,077	-		962,753	962,753
25	Ball Aerospace & Technologies Corp.	481,229	-		148,145[b]	148,145
26	Materials Research & Design Inc.	799,993	-	-	-	-
27	Ohio University	265,215	-		61,456[c]	61,456
28	University of Oklahoma	285,392	-	-	-	-
29	Pennsylvania State University	670,929	-	98,036		98,036
30	Pennsylvania State University	284,461	-	26,951		26,951
31	Virginia Tech University	8,639	-	-	-	-
32	Seagull Technology, Inc.	2,109,740	-	-	-	-
33	Northrup Grumman Systems Corporation	2,635,347	-	-	-	-
34	University Of Texas at Austin	657,000	-	51,566	-	51,566
35	University of Minnesota	256,000	-	15,933		15,933

Sample Item	NRA Award Recipient	Award Total	Unallowable Fees	Unsupported Tuition Costs	Other Unsupported Costs	Total Questioned Costs
36	Brown University	330,000	-	-	-	-
37	Massachusetts Institute of Technology	1,690,359	-	-	-	-
38	Airborne Systems North America of CA, Inc.	250,000	-	-	-	-
39	University of Alabama	387,827	-	-	-	-
40	Krestrel Technology LLC	525,150	-	-	-	-
41	Research Triangle Institute	600,528	-	-	-	-
42	Honeywell International Inc.	4,379,195	-	-	-	-
43	Pennsylvania State University	414,380	12,590		30,826[d]	43,416
Total		**$50,892,020**	**$22,114**	**$589,895**	**$1,815,740**	**$2,427,749**

[a] Includes unsupported tuition costs of $58,703 and applicable indirect costs of $1,485 associated with Other Unsupported Costs of $3,000.

[b] Includes unsupported contract costs of $110,000 and applicable indirect costs and profit of $38,145.

[c] Includes unsupported clerical costs of $41,807 and applicable indirect costs of $19,649.

[d] Includes unsupported equipment costs of $19,939 and applicable indirect costs of $10,887.

SAMPLING METHODOLOGY AND PROJECTION OF RESULTS

For our audit, we selected a simple random sample of 43 ARMD NRA awards from the 447 awarded since the program's inception in May 2006 through January 31, 2011. Our sample of 43 NRA awards included 7 that were funded by the Recovery Act.

NRA Awards Advanced Goals. From our sample of 43 awards, we selected a subset of 18 awards, which included 4 of the 7 Recovery Act-funded awards, for our initial audit work. Our review of this subset was sufficient to determine that NASA's aeronautics-related NRA awards, including awards funded by the Recovery Act, advanced the aeronautics research goals established by NASA (all of the 18 awards in that sample advanced ARMD's goals). Therefore, we did not review the other 25 NRA awards in our random sample for technical merit.

Questioned Costs in NRA Awards. We reviewed all 43 NRA awards, valued at $50,892,020, for questioned costs. We found that 18 NRA awards (42 percent of 43 awards) contained unallowable and unsupported costs of $2,427,749 (4.8 percent of $50.9 million).[29] Our analysis of the 43 statistically selected NRA awards from the total 447 awarded provides us the ability to make the following projections.

Number of Awards with Questioned Costs. We are 80 percent confident that between 146 and 229 of the 447 NRA awards contained questioned costs (between 33 and 51 percent), with the mean being 187 awards.[30]

Amount of Questioned Costs. We are 80 percent confident that the dollar value of questioned costs contained in the 447 NRA awards, valued at $434.7 million, is between $11 million and $39.4 million, with the mean being $25.2 million.[31]

[29] See Appendix B for a breakdown of questioned costs in our sample by award.

[30] Statistical attribute projection, lower bound 146 of 447 NRA awards, upper bound 229 of 447 NRA awards.

[31] Statistical variable projection, lower bound $11,045,985 of $434,744,789 NRA award dollars, upper bound $39,428,610 of $434,744,789 NRA award dollars.

Future Years. We estimate that NASA could avoid awarding approximately $3.6 million of unallowable and unsupported costs annually in ARMD NRA awards by addressing the type of deficiencies we found in our sample. We obtained our estimate by applying the 4.8 percent of questioned costs in our sample to ARMD's $75 million annual NRA funding level as follows:

ARMD's annual NRA funding level	$75,000,000
Multiplied by percent of questioned costs in sample	x 0.048
Estimated annual savings	$3,600,000

MANAGEMENT COMMENTS

National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001

APR 2 3 2012

Reply to Attn of: Office of Procurement

TO: Assistant Inspector General for Audits

FROM: Assistant Administrator for Procurement

SUBJECT: Response to Office of Inspector General (OIG) Draft Audit Report, "Review of NASA's Use of Research Announcement Awards for Aeronautics Research" (Assignment No. A-11-013-00)

The Office of Procurement (OP) appreciates the opportunity to review your revised draft audit report entitled "Review of NASA's Use of Research Announcement Awards for Aeronautics Research" (Assignment No. A-11-013-00) dated March 23, 2012.

We are pleased by the findings that aeronautics-related NASA Research Announcement (NRA) awards, including those funded by the Recovery Act, are aligned with the Agency's aeronautics research goals. We also agree with OIG findings regarding a lack of adequate documentation supporting the analysis of proposals leading to the award of grants, cooperative agreements and contracts. Your review of NASA's pre-award processes can help us to improve our internal controls with respect to the governance of contracts, grants and cooperative agreements.

As we stated in our February 17, 2012 response to your original draft report, we continue to be concerned with the analysis and conclusions drawn with respect to the "allowability" of proposed costs and the resulting extrapolation of estimated savings. Additionally, the draft report paraphrases OMB Circular A-21 regarding the allowability of scholarships and student aid costs rather than citing the actual language. By paraphrasing the Circular, it does not accurately convey the requirements of the Circular and therefore will mislead readers by creating the impression that NASA is accepting and paying for unallowable costs when that conclusion is not supported by the findings and analysis. Finally, the revised draft report continues to mischaracterize circumstances surrounding the Glenn Research Center's (GRC) handling of proposed fee with respect to the identified contract with Penn State.

A lack of adequate proposal analysis documentation to determine price reasonableness does not necessarily make costs unallowable. The conclusions contained in the report appear to be based primarily on the adequacy of documentation rather than on evidence indicating that the actual determination did not take place or that the Government actually paid unallowable costs. As a result, using the questioned costs as a basis to extrapolate the findings across a larger segment of Aeronautics Research Mission Directorate (ARMD) NRA procurements is not supported.

As stated above, we are still concerned that the revised draft report inaccurately characterizes circumstances surrounding the GRCs handling of proposed fee with respect to the identified contract with Penn State. We still believe that the OIG is inappropriately including the $200,000 Penn State contract in its finding on unallowable fees. GRC did not pay a fee on that contract, and the fee was not hidden in labor and travel costs. We believe the GRC Procurement Office performed appropriate due diligence and provided sufficient documentation to the OIG to support our position.

The report states that unallowable fees totaling $22,114 were permitted on two NRA awards with Penn State. We believe that this amount overstates the fee issue. The contract awarded to Penn State in 2008 did not, in fact, include a fee in the amount of $9,524 as stated in the report. The contracting officer specifically refused to make an award to Penn State that included this fee. At that time, Penn State indicated that the fee was an overhead item, not profit, and they refused to agree to an award for a lesser amount. Because the Applied Research Laboratory (ARL) division of Penn State was required to include this item in their proposals, the only resolution that the University could propose was to transfer the work to their School of Engineering which did not charge that particular fee/overhead item. The revised proposal from the School of Engineering included additional labor and travel costs because additional personnel were now involved. The Government fully understood the basis of the revised proposal. There is no evidence that the University was disguising an unallowable fee in another form. The University action was transparent in that the original proposal submitted under the oversight of the ARL was submitted using ARL rates while the revised proposal was submitted under the oversight of the School of Engineering and used School of Engineering approved rates. It is inaccurate for the report to characterize that both the University and the contracting officer attempted to deceive or hide an unallowable fee. It is also inaccurate to include the originally proposed $9,524 fee in the identified unallowable fee total and then multiply this against the universe of ARMD NRA awards because the contract in question did not, in fact, include any unallowable fees.

In the draft report, the OIG outlines several findings and communicates two recommendations. NASA's response to the recommendations, including planned corrective actions, follows:

Recommendation 1: Provide training to procurement personnel regarding the prohibition on fees to educational institutions and the requirements for documenting cost elements such as subcontracts and tuition. The training should specify appropriate corrective actions when procurement personnel identify unallowable fees and ensure that procurement personnel understand the need to have a reasonable basis for assessing the allowability of proposed costs.

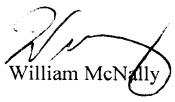
Management's Response: NASA partially concurs with this recommendation because we do not agree with the analysis and conclusions that led to this recommendation. In response to previous OIG audits and recommendations, the OP has developed two cost/price analysis training classes. These courses are designed to give students the information and resources they need to determine the reasonableness and allowability of costs. The course descriptions for these two cost/price analysis training classes have been previously provided to the OIG. Specifically, the advanced cost/price analysis course has a section that covers the different type of contract

vehicles and techniques for selecting the right type of contract for your specific procurement actions. The basic cost/price analysis course training materials include rate analysis, cost reasonableness determinations and associated documentation as well as tools for analyzing individual cost elements. The training also provides numerous case studies and exercises that emphasize cost element review including rate reviews. We have also previously provided to the OIG selected slides from these cost/price analysis training classes that illustrate how the training covers: (1) analysis of fee and specifically the prohibition on fees to educational institutions; (2) analysis and documentation of cost analysis for each element of cost including subcontracts. Currently, the three day basic cost/price analysis course is scheduled to be delivered twice in the upcoming year (2 April – 4 April 2012 and 9 July – 11 July 2012). In addition, the two day advanced cost/price analysis course is scheduled to be delivered twice in the upcoming year (5 April – 6 April 2012 and 12 July – 13 July 2012). If there is demand and additional funding, more classes will be added as appropriate. As a result of the above actions, we request that this recommendation be closed.

Recommendation 2: Revise the annual Guidebook for NRA Proposers to require proposers to submit specific documentation needed to meet the tuition allowability requirements of OMB Circular A-21, Section J.45.

Management's Response: NASA partially concurs with this recommendation because we do not agree with the analysis and conclusions that led to this recommendation. However, we will perform a review of the annual Guidebook for NRA Proposers, in conjunction with the mission directorates, and revise it as needed to ensure that the necessary documentation is received in order to determine if proposed tuition costs are reasonable. We estimate completion of this assessment, and any changes that may be needed, to be completed by February 2013.

Thank you for the opportunity to review and comment on the subject draft audit report. If you have further questions or require additional information on the NASA response to the draft report please contact Andrew O'Rourke at 202-358-4560.



William McNally

REPORT DISTRIBUTION

National Aeronautics and Space Administration

Administrator
Deputy Administrator
Chief of Staff
Associate Administrator for Aeronautics Research
Assistant Administrator for Procurement
NASA Advisory Council's Audit, Finance, and Analysis Committee
Director, Ames Research Center
Director, Dryden Flight Research Center
Director, Glenn Research Center
Director, Langley Research Center
Executive Director, NASA Shared Services Center

Non-NASA Organizations and Individuals

Office of Management and Budget
    Deputy Associate Director, Energy and Science Division
        Branch Chief, Science and Space Programs Branch
Government Accountability Office
    Director, Office of Acquisition and Sourcing Management

Congressional Committees and Subcommittees, Chairman and Ranking Member

Senate Committee on Appropriations
    Subcommittee on Commerce, Justice, Science, and Related Agencies
Senate Committee on Commerce, Science, and Transportation
    Subcommittee on Science and Space
Senate Committee on Homeland Security and Governmental Affairs
House Committee on Appropriations
    Subcommittee on Commerce, Justice, Science, and Related Agencies
House Committee on Oversight and Government Reform
    Subcommittee on Government Organization, Efficiency, and Financial Management
House Committee on Science, Space, and Technology
    Subcommittee on Investigations and Oversight
    Subcommittee on Space and Aeronautics

Major Contributors to the Report:

Raymond Tolomeo, Director, Science and Aeronautics Research Directorate
Nora Thompson, Project Manager
Jobenia Odum, Management Analyst
James Pearce, Auditor
Robert Rose, Auditor
Arnold Pettis, Data Mining, Statistician, Application Developer
Frank Mazurek, Legal Counsel

APRIL 30, 2012

REPORT No. IG-12-011

OFFICE OF AUDITS

OFFICE OF INSPECTOR GENERAL

ADDITIONAL COPIES

Visit http://oig.nasa.gov/audits/reports/FY12/ to obtain additional copies of this report, or contact the Assistant Inspector General for Audits at 202-358-1232.

COMMENTS ON THIS REPORT

In order to help us improve the quality of our products, if you wish to comment on the quality or usefulness of this report, please send your comments to Mr. Laurence Hawkins, Audit Operations and Quality Assurance Director, at Laurence.B.Hawkins@nasa.gov or call 202-358-1543.

SUGGESTIONS FOR FUTURE AUDITS

To suggest ideas for or to request future audits, contact the Assistant Inspector General for Audits. Ideas and requests can also be mailed to:

Assistant Inspector General for Audits
NASA Headquarters
Washington, DC 20546-0001

NASA HOTLINE

To report fraud, waste, abuse, or mismanagement, contact the NASA OIG Hotline at 800-424-9183 or 800-535-8134 (TDD). You may also write to the NASA Inspector General, P.O. Box 23089, L'Enfant Plaza Station, Washington, DC 20026, or use http://oig.nasa.gov/hotline.html#form. The identity of each writer and caller can be kept confidential, upon request, to the extent permitted by law.