National Aeronautics and Space Administration

Office of Inspector General
Washington, DC 20546-0001

July 14, 2014

Rockwell Collins
Attn: Mr. Philip J. Jasper, EVP & COO, Government Systems
400 Collins Road NE
Cedar Rapids, Iowa 52498-0505

SUBJECT: Audit of NASA's Cooperative Agreement Awarded to Rockwell Collins (Report No. IG-14-025; Assignment No. A-14-006-00)

Dear Mr. Jasper:

NASA awards approximately $846 million in grants and cooperative agreements annually and faces the ongoing challenge of ensuring the Agency administers these awards appropriately and recipients accomplish stated goals and objectives. In September 2011, the NASA Office of Inspector General (OIG) reported that NASA did not have an adequate system of controls in place to ensure proper administration and management of its grant program, and that as a result some grant funds had not been used for their intended purposes.[1] Following publication of that report, we began a series of audits examining specific NASA grants and cooperative agreements. In this letter, we present the results of our review of a $2.45 million cooperative agreement NASA awarded to Rockwell Collins, Government Systems (Rockwell Collins).

Background

Founded in 1933, Rockwell Collins is a commercial firm based in Cedar Rapids, Iowa, that supports customers in the aerospace and defense industries. Rockwell Collins has expertise in flight-deck avionics, cabin electronics, mission communications, information management, and simulation and training and a global service and support network spanning 27 countries.

In 2011, NASA's Glenn Research Center (Glenn) awarded a cooperative agreement to Rockwell Collins to conduct a shared resource project to demonstrate and support further development of unmanned aircraft control and non-payload communication (CNPC) systems. These systems enable communication between unmanned aircraft and their remote pilots. Given the critical safety implications, these communications require a dedicated and protected aviation spectrum and national and international standards

[1] NASA OIG, "NASA's Grant Administration and Management" (IG-11-026, September 12, 2011).

defining operational requirements. In the United States, NASA is charged with developing the technical body of evidence to support spectrum allocation requirements and national and international standards development for the CNPC link.

The specific goal of the cooperative agreement with Rockwell Collins is to develop prototype radio hardware that will provide a basis for validating and verifying proposed CNPC system performance requirements. Specifically, the project will demonstrate a CNPC system, including interfacing to a ground-based pilot station, transmission of CNPC data to and from more than one ground station, and onboard reception and transmission of CNPC data on more than one unmanned aircraft. Ultimately, Rockwell Collins is scheduled to deliver 11 sets of radio hardware to NASA by October 31, 2014.[2]

The objective of this audit was to determine whether Rockwell Collins used NASA's cooperative agreement funds for their intended purpose and whether the costs associated with the agreement were allowable, reasonable, and in accordance with applicable laws, regulations, guidelines, and the award's terms and conditions. Specifically, we reviewed Rockwell Collins' (1) program performance and accomplishments, (2) accounting and internal control environment, (3) budget management and control, and (4) reporting. We also reviewed NASA's administration of the agreement.

To accomplish our audit, we conducted interviews with Glenn contracting and technical officers and spoke with responsible Rockwell Collins personnel. In addition, we visited Rockwell Collins Government Systems' Headquarters in Cedar Rapids to document accounting, procurement, and project management processes and internal controls. Finally, we reviewed laws, regulations, and other documents pertinent to our audit. Additional details of our scope and methodology, review of internal controls, and prior audit coverage can be found in Appendix A.

Results

We found that Rockwell Collins managed the cooperative agreement in accordance with applicable laws, regulations, guidelines, and the terms and conditions of the award. Specifically, we found that Rockwell Collins had a strong system of accounting and internal controls, adequately accounted for expenditures, properly managed its cooperative agreement budget, and fulfilled performance goals. We also found NASA's level of commitment to the agreement was adequate and Agency personnel contributed to successful completion of performance goals. However, we identified several administrative errors in pre-award and award documentation and noted NASA had not received a required information technology (IT) security plan from Rockwell Collins or documented a reason for waiving that requirement.

Performance Goals Being Met. Performance milestones are important to ensuring all parties stay on track to accomplish the stated goals and objectives of an award. NASA's agreement with Rockwell Collins contains 17 performance milestones, which generally

[2] The original Statement of Work included delivery of eight radio sets to NASA. On September 16, 2013, NASA issued an award modification for $450,000 to acquire an additional three radio sets.

fall into three main categories: (1) CNPC radio development and test, (2) CNPC radio certification, and (3) CNPC radio fabrication.[3] At the time of our audit fieldwork, Rockwell Collins was to have completed 10 of the 17 milestones.

We found Rockwell Collins completed all 10 milestones on time and in accordance with the terms of the cooperative agreement, including completion of CNPC System Waveform Trade Studies, which incorporated changes in response to feedback from a NASA external review.[4] In addition, Rockwell Collins successfully developed system specifications and completed Preliminary Design and Critical Design Reviews within expected timeframes.

On February 28, 2013, Rockwell Collins provided NASA the first prototype test report, which identified various testing scenarios performed to demonstrate the waveform performance in real-world environments. The test involved demonstrating that four radio sets delivered to NASA were capable of supporting NASA L-band CNPC integration and flight-testing.[5] Subsequently, as a result of the ground and flight testing of the first four prototype radios Rockwell Collins delivered the Unmanned Aircraft CNPC System Revision Design Review #1 report on June 19, 2013, which identified various hardware modifications as well as software and firmware updates. On September 27, 2013, Rockwell Collins delivered the second prototype test report, which identified various testing scenarios to demonstrate performance capability.[6] This second prototype test report also included initial development of the C-band portion of the waveform, allowing for delivery of four additional radio sets to NASA with both L-band and C-band capability.[7] The remaining three radio sets are expected to be delivered to NASA by July 31, 2014.

[3] Subsequent to the award, NASA and Rockwell Collins consolidated six of these milestones into three milestones and deleted one milestone. However, because this change did not alter the work to be performed and for ease of discussion, we refer to the milestones as they are identified in the original award documentation.

[4] A waveform is an image that represents an audio signal or recording. Waveforms show the changes in amplitude over a period of time. The amplitude of the signal is measured on the y-axis (vertically), while time is measured on the x-axis (horizontally).

[5] L-band is a range of frequencies extending from 960-977 megahertz. The "band" in use refers to the radio frequencies used to and from the satellite.

[6] The completion of this report, along with the delivery of the four radio systems for ground- and flight-testing, were accomplished during milestones 11 and 12, which were subsequently combined into one overarching milestone for both ground and flight-testing.

[7] C-band is a range of frequencies extending from 5030-5091 megahertz. The "band" in use refers to the radio frequencies used to and from the satellite.

To ensure the award stayed on track, the NASA technical officer and the Rockwell Collins principal investigator held weekly team meetings to review progress, assess risks, respond to unexpected developments, and plan for future activity. This coordination included detailed milestone and financial tracking, discussion of variance root causes, and the development of action plans to ensure proper project performance.

Administrative Errors in Pre-award and Award Documentation. We identified errors in the Glenn contracting officer's overall administration of the cooperative agreement, including failure to document adjustments to milestones, incorrect references to Federal regulation in award documents, no monetary valuation for NASA's in-kind contributions, and the use of documentation intended for a different award instrument. However, none of these errors had a material effect on the outcome of the award.

First, we identified several instances in which NASA and Rockwell Collins agreed to changes to milestone delivery dates and associated payments but NASA did not document the changes in formal modifications to the cooperative agreement.[8] Second, we noted that in several instances NASA cited Code of Federal Regulations provisions that apply to awards to educational and nonprofit organizations, rather than provisions that apply to awards to commercial firms.[9]

In addition, we found that although NASA's responsibilities and contributions to the research covered by the award are listed in the solicitation, NASA did not assign a monetary value to those contributions or provide a justification for not doing so.[10] The Glenn contracting officer stated that NASA's in-kind contributions were not assigned a monetary value because Federal regulation only requires in-kind contributions be valued when quantifiable and the labor associated with the cooperative agreement was not quantifiable at the time of award. The contracting officer did not address the monetary value of Glenn's in-kind contributions of ground facilities or test flights. We believe that NASA's contribution of ground facilities and flight testing could have been quantified under NASA's full cost accounting initiative. In any event, the procurement file should have contained documentation explaining the reason the contributions were not assigned a monetary value.

We also found that the Glenn contracting officer did not utilize the correct delegation letter as required by Federal regulation.[11] Specifically, NASA used NASA Form 1634, "Contracting Officer Technical Representative (COTR)/Alternate COTR Delegation" to delegate responsibilities to the technical officer when NASA Form 1678, "NASA Technical Officer Delegation for Cooperative Agreements with Commercial Firms" should have been used.

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[8] 14 C.F.R. Part 1274.938, "Modifications," January 1, 2010.

[9] 14 C.F.R. Part 1260, "Grants and Cooperative Agreements," January 1, 2010, and 14 C.F.R. Part 1274, "Cooperative Agreements with Commercial Firms," January 1, 2010.

[10] 14 C.F.R. Part 1274.203, "Solicitation/Cooperative Agreement Notices," January 1, 2010.

[11] 14 C.F.R. Part 1274.301, "Delegation of Administration," January 1, 2010.

As noted above, we have no concerns that these issues will materially affect the outcome of the cooperative agreement with Rockwell Collins. However, they may indicate potential training deficiencies or possible inexperience with awarding and administering cooperative agreements with commercial firms. We discussed these issues with Glenn's Procurement Branch Chief and were informed that immediate action had been taken to designate a subject matter expert at the Center to consult on the regulatory requirements for cooperative agreements with commercial firms.

IT Security Plan Not Submitted. Finally, during the course of our review we learned that NASA did not receive or request from Rockwell Collins an IT security plan as required by the cooperative agreement. Instead, on October 25, 2011, Rockwell Collins notified NASA that "formal procedures and controls for a Rockwell Collins IT Security Plan are not required at this time since [Rockwell Collins] will not have access to any computers connected to the NASA internal network." However, neither this notification nor any documentation indicating that the Glenn contracting officer had reviewed, assessed, or approved Rockwell's assertion was included in NASA's procurement file.

While the work performed under the cooperative agreement does not require a direct connection to NASA computer networks, the radio prototypes developed under the cooperative agreement contain computer processors that could potentially be compromised, which could affect the data transmitted or received by the radios or the NASA computers used to assess and test the equipment. We discussed the issue with the Glenn Chief Information Security Officer, who confirmed the potential risks and noted those risks could have been mitigated by Glenn's existing IT security plans and program. The Security Officer also stated that his office typically reviews IT security plans received from grant and cooperative agreement recipients to assess their adequacy and sufficiency.

We spoke with Glenn's Deputy Chief of Procurement about this matter and were informed that the issue identified will serve as a "lesson learned" to be discussed at the upcoming Center Procurement Division personnel meeting. Further, the Deputy Chief will remind personnel that if an IT security plan clause is included in any contract or cooperative agreement and a contractor requests a waiver, the contracting officer must provide a response to that request but only after coordinating its review with the Chief Information Officer.

Management Action

We found no material issues associated with Rockwell Collins' administration of the subject cooperative agreement and accordingly have no recommendations addressed to the company. Further, while we identified issues with NASA's administration and management of the cooperative agreement, the Glenn Procurement Division has already taken action to address those deficiencies. Going forward, we encourage NASA to review Center practices for the award, administration, and management of cooperative agreements with commercial firms as part of future Procurement Management Reviews in an effort to determine whether the issues identified are unique to this award or systemic weaknesses requiring improved training.

We provided a draft of this letter to Rockwell Collins and NASA for review and comment on July 8, 2014. We received only minor technical corrections in response and incorporated those corrections, as appropriate.

We appreciate the courtesies extended during our audit. If you have any questions, please contact Laura Nicolosi, Mission Support Director, Office of Audits, at 202-358-2562 or laura.b.nicolosi@nasa.gov.

Sincerely,

Paul K. Martin
Inspector General

cc: Jeff Keleher
Contract Manager, Rockwell Collins

Bill McNally
Assistant Administrator for Procurement

James M. Free
Director, Glenn Research Center

Mark W. Manthey
Deputy Chief, Procurement Division, Glenn Research Center

APPENDIX A

Scope and Methodology

We performed this audit from January 2014 through July 2014 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.

Our overall audit objective was to determine whether NASA's cooperative agreement funds were used for their intended purposes and whether the recipient was compliant with established laws, regulations, and NASA-specific requirements in its administration and management of the cooperative agreement. To accomplish our objectives, we interviewed key personnel at Glenn and Rockwell Collins involved in cooperative agreement administration, management, and award processes. We identified and reviewed relevant Federal laws and regulations, NASA policies and requirements, and other criteria. The methodology we followed for the review is described below.

Cooperative Agreement Selection. We judgmentally selected the cooperative agreement awarded to Rockwell Collins by Glenn for substantive testing based on the award dollar value, the number of supplements awarded, and the fact that it was a cooperative agreement awarded to a commercial firm. The cooperative agreement was awarded by the NASA Glenn Research Center.

Cooperative Agreement Award File Documentation. We reviewed cooperative agreement award documentation, including the cooperative agreement notice, statement of work, award documentation, delegation letters, proposal, and milestone reports. We interviewed the NASA contracting officer and the NASA technical officer responsible for the Rockwell Collins cooperative agreement.

Recipient Site Visit. We visited the Rockwell Collins Headquarters in Cedar Rapids, Iowa. We interviewed Rockwell Collins officials and performed the substantive transaction testing necessary to validate whether NASA cooperative agreement funds were used for their intended purpose while assessing the sufficiency of recipient performance.

Testing Conducted. We tested compliance with what we considered the most important conditions of the cooperative agreement. Unless otherwise stated in this letter, the criteria we audited against included Federal and NASA requirements, the NASA Grant and Cooperative Agreement Handbook, and the terms and conditions of the cooperative agreement. In conducting our audit, we employed judgmental sampling designed to obtain broad exposure to numerous facets of the cooperative agreement reviewed, such as

dollar amounts or expenditure category. Specifically, we sampled 27 transactions, totaling approximately $383,000 from various cost categories, including miscellaneous, manufacturing, materials, and travel. In addition, we sampled payroll expenses for three employees, totaling approximately $16,000. This nonstatistical sample design does not allow projection of the test results to the universes from which the samples were selected.

Specifically, we tested the recipient's:

- Program performance and accomplishments to determine whether Rockwell Collins met or is capable of meeting the performance objectives and whether the recipient collected data and developed performance measures to assess accomplishment of the intended objectives.

- Accounting and internal controls to determine whether Rockwell Collins had sufficient accounting and internal controls to identify and report expenditures and reimbursements, including testing cooperative agreement

    - invoices to determine whether invoice requests for payment were adequately supported and whether the recipient was managing cooperative agreement funds in accordance with Federal requirements, and

    - expenditures to determine the accuracy and allowability of costs charged to the award.

- Performance reporting to determine whether the required reports were submitted on time and accurately reflected cooperative agreement activity.

We also performed limited work and confirmed that Rockwell Collins did not generate or receive program income and did not have any subrecipients to monitor. We therefore performed no testing in these areas.

Federal Laws, Regulations, Policies, and Requirements. We identified and reviewed the following criteria as applicable to our audit objectives:

Public Law 95-224, "Federal Grant and Cooperative Agreement Act of 1977," February 3, 1978

14 C.F.R. Part 1274, "Cooperative Agreements with Commercial Firms," January 1, 2010

14 C.F.R. Part 1260, "Grants and Cooperative Agreements," January 1, 2010

NASA Federal Acquisition Regulation Supplement Part 1830, "Cost Accounting Standards Administration," November 1, 2004

NASA Policy Directive 5101.32E, "Procurement, Grants, and Cooperative Agreements," July 28, 2013

Use of Computer-Processed Data. We used NASA computer processed data to obtain a universe of NASA grants and cooperative agreements from which the Rockwell Collins cooperative agreement was selected and to obtain information regarding the cooperative agreement being audited. We also used computer-processed data extracted from Rockwell Collins' cost accounting system to determine the expenditure transactions charged to the award. Although we did not independently verify the reliability of this information, we compared it with other available supporting documents to determine data consistency and reasonableness. From these efforts, we believe the information we obtained is sufficiently reliable for this report.

Prior Coverage

During the last 5 years, NASA and the Government Accountability Office have issued the following reports and testimony that are of particular relevance to the subject of this report. Unrestricted reports can be accessed over the Internet at http://oig.nasa.gov/audits/reports/ and http://www.gao.gov.

NASA Office of Inspector General

"Audit of NASA Grant Awarded to HudsonAlpha Institute for Biotechnology" (IG-12-019, August 3, 2012)

"Audit of NASA Grants Awarded to the Philadelphia College Opportunity Resources for Education" (IG-12-018, July 26, 2012)

"Audit of NASA Grants Awarded to the Alabama Space Science Exhibit Commission's U.S. Space and Rocket Center" (IG-12-016, June 22, 2012)

"NASA's Grant Administration and Management" (IG-11-026, September 12, 2011)

Government Accountability Office

"Federal Grants: Improvements Needed in Oversight and Accountability Processes" (GAO-11-773T, June 23, 2011)

"Grants Management: Improved Planning, Coordination, and Communication Needed to Strengthen Reform Efforts" (GAO-13-383, May 23, 2013)