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REVIEW REPORT

OFFICE OF AUDITS

REVIEW OF NASA'S TRACKING AND DATA RELAY SATELLITE SYSTEM

OFFICE OF INSPECTOR GENERAL

National Aeronautics and
Space Administration

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Paul K. Martin
Inspector General

Acronyms

C.F.R.	Code of Federal Regulations
CM&O	Center Management and Operations
EVM	Earned Value Management
FY	Fiscal Year
GAO	Government Accountability Office
IDIQ	Indefinite-Delivery, Indefinite Quantity
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
OIG	Office of Inspector General
SCaN	Space Communications and Navigation
TDRS	Tracking and Data Relay Satellite
TDRSS	Tracking and Data Relay Satellite System

OVERVIEW

REVIEW OF NASA'S TRACKING AND DATA RELAY SATELLITE SYSTEM

The Issue

NASA's Tracking and Data Relay Satellite System (TDRSS), also known as the Space Network, provides tracking, data, voice, and video services to the International Space Station; Space Shuttle; NASA's space and Earth science missions; other Federal agencies, including the Missile Defense Agency and the National Science Foundation; and commercial users, such as The Boeing Company and Lockheed Martin Commercial Launch Services. The Space Communications and Navigation Office at NASA Headquarters manages the system.

TDRSS is comprised of two segments – ground and space. The ground segment consists of stations in New Mexico, Guam, and Maryland that provide command and control services for the entire TDRSS network. The ground system also provides telecommunication services between low-Earth orbiting spacecraft and user control centers, thereby eliminating the need for many of the worldwide ground stations previously used for tracking such spacecraft.

The space segment consists of eight Tracking and Data Relay Satellites (TDRS) in geosynchronous orbits[1] around Earth to provide global coverage. NASA launched the first of 10 satellites, TDRS-1, in 1983, and the newest satellite in the system, TDRS-10, in 2002.[2]

The existing TDRS fleet is aging and NASA predicts that, unless replacements are launched for the satellites nearing the end of their useful lives, there could be insufficient tracking capability to support NASA and other Government and non-Government missions as early as 2011. Accordingly, in December 2007, NASA entered into a $696 million contract with Boeing Satellite Systems (Boeing) to develop two new tracking satellites, TDRS K and L,[3] and to make associated modifications to the White Sands, New Mexico ground station. Expected launch dates for TDRS K and L are 2012

[1] A geosynchronous orbit is one in which the satellite is always in the same position with respect to the rotating Earth. The satellite orbits at an elevation of approximately 35,790 km because that produces the time for one orbit equal to the period of rotation of the Earth (23 hours, 56 minutes, 4.09 seconds). By orbiting at the same rate, in the same direction as Earth, the satellite appears stationary (synchronous with respect to the rotation of the Earth).

[2] TDRS-1 was decommissioned in 2009. The second TDRS satellite was lost in the 1986 Space Shuttle Challenger accident.

[3] Following launch, TDRS K and L will be known as TDRS-11 and TDRS-12, respectively.

and 2013, respectively. In addition, in October 2003, NASA awarded a $185.2 million core contract with a maximum value of $600 million for task orders to Honeywell Technologies Solutions, Inc. (Honeywell) for continuous operations and monitoring of the space communications network and for the detection, reporting, isolating, and resolution of anomalies in network systems, interfaces, and services.

We initiated this audit to determine whether NASA has effectively managed the TDRSS Program to accomplish its technical objectives while meeting established milestones and controlling costs. Specifically, we examined whether NASA had taken steps to ensure that TDRS K and L were on schedule, within budget, and met technical requirements and that acquisition risks were identified and sufficiently mitigated. We also examined whether NASA performed adequate contract administration and whether other users of TDRSS properly reimbursed NASA for services provided to them and shared in the costs of system upgrades.

Prior to initiating this audit, we received an allegation that Boeing had submitted a low bid in order to obtain the TDRS contract and subsequently had increased the Project's cost through contract modifications. As part of this audit, we assessed the merit of this allegation. Details of the audit's scope and methodology are in Appendix A.

Results

Development of TDRS K and L is on schedule and meeting its planned budget. We found that NASA has managed the Project within cost, schedule, and performance requirements and Project managers implemented risk and earned value management (EVM) processes[4] to monitor and mitigate programmatic risks associated with TDRSS development efforts. NASA also effectively administered the TDRSS development and support service contracts. However, we found that NASA has not revised the reimbursable rates it charges TDRSS customers since 2006 and that NASA officials did not know what factors were used to formulate the 2006 rates. Accordingly, NASA does not know whether the rates it has been charging customers during the past 4 years reflected current operating costs. We also found that internal controls for continuity of operations were not established, which led to the possible loss to NASA of reimbursable dollars.

Project Management Implemented Effective Processes. We found that NASA managed the TDRS K and L Project within established cost and schedule milestones and met overall technical objectives. Project managers identified and mitigated risks, thereby reducing the potential for project performance shortfalls. In addition, management used a formally validated EVM system to identify cost and schedule trends and variances, which allowed them to implement corrective actions in a timely manner.

[4] Risk management involves identifying potential risks and developing management decisions designed to avoid or mitigate those risks. Earned value management is an integrated management control system for assessing and quantifying what a contractor or field activity is achieving with program dollars.

NASA Appropriately Administered and Monitored Contracts. We found that the Space Network Office and the TDRS Project Office appropriately awarded, administered, and monitored performance of the contracts with Honeywell and Boeing, respectively. For the Honeywell contract, we found that NASA followed appropriate procedures for awarding and administering the contract and monitored contractor performance in accordance with Federal and NASA Acquisition Regulations. For example, NASA conducted award fee evaluations as defined in the award fee plan and disbursed award fees in accordance with contract terms and conditions.[5] For the Boeing contract, TDRS Project personnel and on-site representatives at the contractor facility performed the oversight required to manage the contract appropriately. In addition, communication between NASA and the contractor was sufficient to mitigate acquisition risks. Finally, we found no evidence substantiating the allegation that Boeing submitted a low bid in order to win the contract and then increased the contract cost through modifications. We found that NASA selected Boeing following an open competition in which NASA received two proposals.

The only modifications affecting the scope of the Boeing contract occurred in June 2010 when NASA changed contract requirements and increased the contract costs by directing Boeing to procure and test spare parts and accommodate contingency operations tests. Although the modifications did increase the contract cost, the changes were initiated by NASA and were not initiated by Boeing.

NASA Needs to Review Its Current Reimbursable Rates to Ensure They Are Appropriate and Reasonable. We found that NASA has not revised the reimbursable rates it charges TDRSS customers since 2006, and that current NASA Program officials did not know what factors were used to formulate the 2006 rates. Therefore, NASA does not know, and we could not determine, whether the rates NASA was charging its customers at the time of our audit were appropriate or reasonable. In addition, NASA has failed to update the Code of Federal Regulations (C.F.R.)[6] to reflect current rates and other current policies and practices.

We found that these issues were attributable in part to repeated reorganizations in the TDRSS Program, which resulted in a loss of institutional knowledge. From the 1980s until the mid 1990s, TDRSS operated as a distinct directorate at NASA Headquarters. In 1996, NASA transferred responsibility for TDRSS to Johnson Space Center. In 2001, NASA transferred responsibility for TDRSS back to NASA Headquarters under what is now the Space Operations Mission Directorate. These repeated transfers of responsibility and personnel caused a loss of institutional knowledge to the degree that present Program personnel acknowledged that they were unaware that the C.F.R. contained provisions relating to TDRSS and that they lacked the expertise to update the TDRSS reimbursable rates.

[5] We reviewed award fee documentation and processes but did not independently evaluate NASA's rationale for awards made to the contractor.

[6] Title 14 C.F.R. Part 1215, "Tracking and Data Relay Satellite System (TDRSS)."

Lack of Internal Controls and Inaccurate Advice Led to Collection Issues and Loss of Revenue. We found a difference in the way that Program financial managers bill classified and nonclassified users, with one manager charging nonclassified users for expenses that were not charged to classified users. We also found that the Networks Integration Management Office, which is responsible for collecting fees from nonclassified users, did not have an internal control procedure in place to provide for continuity of operations. Consequently, when the resource analyst responsible for handling nonclassified reimbursable payments was absent from the office for an extended period of time, customers were not billed in a timely manner, resulting in a loss of funds to NASA. For example, in 2009 NASA wrote off $385,000 that had not been timely billed to a customer who later became insolvent. In addition, $58,700 was returned to customers based on advice by the Regional Finance Office that the funds had expired. However, this advice was not accurate, and $27,200 of this amount should have remained with NASA.

Management Action

We recommended that the Space Communications and Navigation Office assess and update the reimbursable rates NASA charges other TDRSS users and ensure that current rates as well as other current policies and processes are reflected in the Code of Federal Regulations. In conducting this assessment, the Office should ensure that the factors constituting the reimbursable rate formula are documented and consistently applied. In addition, to ensure user reimbursements to NASA are accurate and appropriately tracked, the Networks Integration Management Office should enhance its internal control procedures to provide for continuity of operations.

In response to our August 19, 2010, draft of this report, the Associate Administrator for Space Operations concurred with our recommendations and stated that the Space Communications and Navigation Office will update the algorithm used to calculate reimbursable rates to ensure it produces rates that are reasonable. In addition, the Space Communications and Navigation Office will review Title 14 C.F.R. Part 1215 to determine whether the regulation is still needed and, if so, ensure that it reflects the current TDRSS operating procedures and rates. With respect to our recommendation regarding ensuring continuity of operations, the Associate Administrator noted that the lack of timely billing we identified was related to an employee's unexpected medical absence and stated that the Networks Integration Management Office has since increased the size of its staff and will document the step-by-step process for handling reimbursable accounts so that any future unexpected employee absence will not cause a similar disruption. Finally, the Associate Administrator indicated that a common process is being developed and will be employed for both classified and nonclassified projects. The full text of NASA's comments is reprinted in Appendix C.

We consider the Associate Administrator's proposed actions to be responsive to our recommendations. Therefore, the recommendations are resolved and will be closed upon verification that management has completed the corrective actions.

CONTENTS

INTRODUCTION

Background

NASA built the Tracking and Data Relay Satellite System (TDRSS), also known as the Space Network, to provide tracking, data, voice, and video services to the International Space Station; Space Shuttle; NASA's space and Earth science missions; other Federal agencies, including the Department of Defense and the National Science Foundation; and commercial users such as The Boeing Company and Lockheed Martin Commercial Launch Services. NASA launched the first TDRSS satellite – TDRS-1 – in 1983, and the most recent – TDRS-10 – in December 2002. The launch dates for each TDRSS satellite are set forth in Table 1.

Table 1. TDRSS Satellites by Launch Date

Spacecraft Name Before Launch	Launch Date	Spacecraft Name After Launch
TDRS-A	April 4, 1983	TDRS-1[a]
TDRS-B	January 28, 1986 (lost in the Challenger accident)	
TDRS-C	September 29, 1988	TDRS-3[b]
TDRS-D	March 13, 1989	TDRS-4
TDRS-E	August 2, 1991	TDRS-5
TDRS-F	January 13, 1993	TDRS-6
TDRS-G	July 13, 1995	TDRS-7
TDRS-H	June 30, 2000	TDRS-8
TDRS-I	March 8, 2002	TDRS-9[b]
TDRS-J	December 4, 2002	TDRS-10

[a]TDRS-1 was decommissioned on October 28, 2009 and end of mission activities were completed in June 2010.

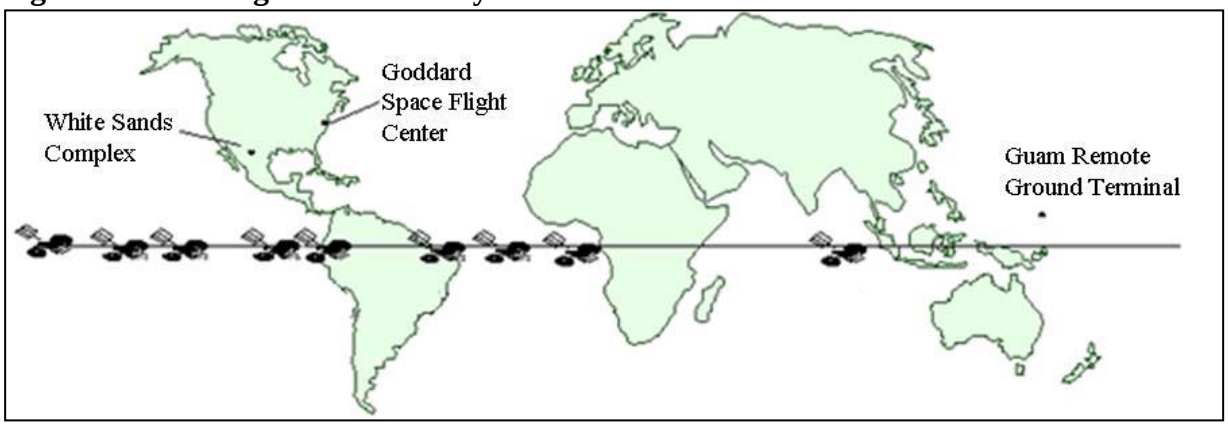
[b]TDRS-3 and TDRS-9 are in on-orbit storage.

Over the last 25 years, TDRSS has delivered pictures, television, and voice data to the scientific community and the general public, including data from more than 100 Space Shuttle and International Space Station missions and the Hubble Space Telescope. A principal advantage of TDRSS is that it consolidates communications services that had previously been provided by multiple worldwide ground stations.

TDRSS is comprised of ground and space segments. The ground segment consists of stations in Guam, Maryland, and New Mexico that provide command and control services for the entire TDRSS network. The space segment consists of eight satellites positioned

in geosynchronous[7] orbits around Earth to provide global coverage. Figure 1 depicts the relative position of the satellites and the ground stations.

Figure 1: Tracking and Data Relay Satellites and Ground Stations



Source: NASA TDRSS System Description

TDRSS satellites were designed for a total life expectancy of 15 years, including 4 years of on-orbit storage. However, the satellites have generally outlasted design expectations. For example, TDRS-1 was in orbit for 26 years before failing. The two next-oldest satellites, TDRS-3 and TDRS-4, have been in orbit for approximately 22 and 23 years, respectively. NASA has predicted that unless replacements are launched for the satellites nearing the end of their useful lives, there could be insufficient capacity to support NASA missions or the needs of other users as early as 2011. Therefore, in 2007 NASA began the acquisition process to build and deploy TDRS K and L.

In order to address current and future TDRSS requirements, NASA entered into contracts with Honeywell Technologies Solutions, Inc. (Honeywell) and Boeing Satellite Systems (Boeing). The Honeywell contract, entered into in October 2003, is a cost-plus-award-fee contract[8] for maintenance and operation of TDRSS ground operations. The contract includes a core requirement for ground and space network operations, engineering and maintenance, and network support functions, and indefinite-delivery, indefinite-quantity (IDIQ) requirements[9] for supporting engineering operations. At contract award, the value of the core requirement was $185.2 million, with a maximum of $600 million for the issuance of IDIQ task orders. In April 2010, NASA extended the contract through

[7] A geosynchronous orbit is one in which the satellite is always in the same position with respect to the rotating Earth. The satellite orbits at an elevation of approximately 35,790 km because that produces the time for one orbit equal to the period of rotation of the Earth (23 hours, 56 minutes, 4.09 seconds). By orbiting at the same rate, in the same direction as Earth, the satellite appears stationary (synchronous with respect to the rotation of the Earth).

[8] A cost-plus-award-fee contract includes a base fee that NASA and the contractor establish prior to contract award and an award amount that the contractor can earn in whole or in part based on its contract performance. The award amount is intended to motivate the contractor in areas such as quality, timeliness, technical ingenuity, and cost-effective management.

[9] An indefinite-delivery contract is a type in which the time of delivery is unspecified in the original contract but established during performance. An indefinite-quantity contract provides for an indefinite quantity, within stated maximum or minimum limits, of specific supplies or services to be furnished during a fixed period, with deliveries scheduled by placing orders with the contractor.

October 8, 2010, with an option for an additional 6-month extension to April 8, 2011. The current contract value, including the extension to October 2010, is $306.4 million for the core effort and a maximum of $824 million for the IDIQ portion. (See Appendix B.)

The contract with Boeing, entered into in December 2007, is a $696.6 million fixed-price-incentive-fee contract for the development and delivery of two new satellites, TDRS K and L. Also included in the contract is a requirement for Boeing to modify the White Sands ground station to ensure that these two new satellites will be fully compatible with and capable of functioning as part of TDRSS. The planned launch dates for TDRS K and L are 2012 and 2013, respectively.

NASA has a contingency plan in place to meet the satellite capacity needs of both NASA and its customers until the new satellites become operational. However, according to the TDRS Project Manager, once TDRS K and L become operational, TDRSS will have sufficient capacity to meet NASA and other customers' requirements through approximately 2016, as long as no existing satellites are decommissioned. Also, the Boeing contract contains an option for the development and delivery of two additional satellites, TDRS M and N.

Objectives

The overall objective of our audit was to determine whether NASA was managing the TDRS K and L Project in order to accomplish its technological objectives while meeting established cost and schedule milestones. Specifically, we examined whether

- acquisition risks were identified and sufficiently mitigated;
- NASA adequately administered the TDRS K and L development and support services contracts; and
- non-NASA users of TDRSS properly reimbursed NASA for the services provided to them and shared in the costs of system upgrades.

Prior to beginning the audit, the Office of Inspector General (OIG) received an allegation that Boeing had bid low on the TDRS K and L contract in order to win the contract and then subsequently requested waivers to technical requirements that increased NASA's cost. To assess the merits of this allegation, we reviewed the original competition and examined source selection information and contract modifications. See Appendix A for details of the audit's scope and methodology, our review of internal controls, and prior audit coverage.

TDRS PROJECT MANAGEMENT IMPLEMENTED EFFECTIVE MANAGEMENT PROCESSES

Development of TDRS K and L is on schedule and meeting its planned budget. We found that NASA implemented sound project management principles to ensure that the Project met schedule milestones and technical requirements and that the TDRS Project Office executed a project plan and used sound risk management and earned value management (EVM) processes. Project planning and scheduling met budget and technical milestones because NASA and Boeing conducted appropriate oversight and communicated effectively throughout the development phases. In addition, use of risk management and EVM processes facilitated early identification of trends and variances, thus allowing sufficient time to implement corrective actions. As a result, the planned launch schedule is consistent with the Project Plan, and the Project has sufficient reserves to meet planned launch dates and ground segment commitments, such as tracking services provided by a ground terminal.

TDRS Project Requirements Were Effectively Executed

As of May 2010, the TDRS K and L Project was meeting technical requirements on schedule and within budget. The TDRS Project Office effectively executed the "Tracking and Data Relay Satellite K Program, Code 454, Project Plan," 454 KP SYS-PLAN-002, March 12, 2009 (Project Plan).

The Project Plan, outlines the technical, schedule, cost control plans, and risk management plans for both TDRS K and L, and provides the scope, implementation approach, project operational environment, and the baseline commitments of the TDRSS Program and the TDRS K and L Project, in accordance with NASA Procedural Requirements (NPR) 7120.5D, "NASA Space Flight Program and Project Management Requirements," March 6, 2007. The Project Plan provides detailed requirements for Project documents to include the TDRSS K and L Program Commitment Agreement (Commitment Agreement),[10] which establishes the TDRS K and L launch delivery dates of December 2012 and December 2013, respectively. NASA awarded Boeing the TDRS Project contract on December 28, 2007, for the design, development, and launch of TDRS K and L with launch dates of April 1, 2012, and February 9, 2013, respectively. By contracting for launch dates that are approximately 8 months earlier than those in the

[10] The Commitment Agreement, required by NPR 7120.8, "NASA Research and Technology Program and Project Management Requirements," February 5, 2008, identifies key schedule milestones for the program and for each project in the program.

Commitment Agreement, NASA built in schedule reserves.[11] Monthly and quarterly status reports from the Project Office and Boeing indicated that the project was progressing in line with the Commitment Agreement.

Project planning and scheduling were successful because of effective communication between NASA and Boeing. NPR 7120.5D, Appendix F.3.3.4.a, "Acquisition Plan," requires project management to develop a surveillance plan that enables the Government to determine whether the contractor's program and processes are functioning in accordance with the terms of the contract. To satisfy the requirement, management developed the TDRS K Surveillance Plan, effective April 16, 2007. The NASA Senior Planning Specialist and Boeing Program Integrator met monthly to monitor schedule and technical issues.

We also found that the Project has maintained sufficient schedule reserves to meet contractual launch dates and ground segment upgrades. The Project Office and Boeing have issued separate monthly and quarterly status reports indicating that since November 2008, the Project was maintaining 4 months of launch schedule reserve. As of August 2009, the Project was carrying 87 days of reserve, putting the Project above the Goddard Guideline of 83.7 days.[12] The commitment date for the White Sands Complex upgrade for TDRSS requirements is no later than 8 months prior to launch of TDRS K. As of September 2009, the White Sands Complex modification schedule maintained 2 months of schedule reserve.

Management Tools Were Implemented Effectively

NASA policy requires that specific project management tools be implemented for all Agency programs, projects, and contracts. Specifically, NASA policy requires use of risk management and earned value management (EVM) to help ensure project success. Risk management involves identifying potential risks and developing management decisions designed to avoid or mitigate those risks. When properly executed, risk management reduces the potential for cost overruns, schedule delays, and noncompliance with technical and safety requirements. EVM is an integrated management control system for assessing and quantifying what a contractor or field activity is achieving with program dollars. Successful use of EVM allows project management to measure cost and progress against schedule in the management plan, identify performance trends and variances from

[11] NASA Schedule Management Handbook, October 2, 2006, Section 5.2.61, "Schedule Management Reserve," states that schedule reserve is "used for future situations that are impossible to predict. It is a separately planned quantity of time . . . intended to reduce the impact of missing overall schedule objectives."

[12] Goddard Procedural Requirement 7120.7, "Schedule Margins and Budget Reserves," states that there should be 1 month of funded schedule margin per year from confirmation to the beginning of observatory integration and test; from the start of integration and test to shipment to the launch site (or planned storage) there should be 2 months of funded schedule margin per year; and from delivery to the launch site to launch should be 1 week of funded schedule margin per month.

the management plan, and enables early decision making in time to apply effective corrective actions to minimize cost overruns.

Risk Management. Both NPR 8000.4A, "Agency Risk Management Procedural Requirements," December 16, 2008 (Risk Management Requirements), and the "Tracking and Data Relay Satellite K Program Code 454 Continuous Risk Management Plan," January 5, 2008 (Risk Management Plan), require project management to employ continuous risk management as a decision-making tool. The Risk Management Requirements document identifies six requirements of effective risk management: identification, analysis, planning, tracking, control, and communication of the risk. The Risk Management Plan requires the participation of all project team members, including civil service and contract personnel, and provides metrics to assess program activities such as the number of open and closed risks.

We determined that Project management effectively used the Risk Management Plan metrics for measuring and quantifying risks. For example, as of October 13, 2009, Boeing identified and managed 189 unique project risks. All 189 risks had an identified owner responsible for overseeing implementation of the agreed-to risk disposition. For all risks, Project management provided a documented process for identifying, analyzing, planning, tracking, controlling, and communicating the risks. We interviewed 38 Project staff, all of whom told us that they believed this risk reporting system captured all identified risks and provided a sufficient mechanism for Project staff to report risks. During our audit, we did not identify any additional risks that should have been but were not addressed.

We tracked each of the risks through the risk identification, reporting, and mitigation process and determined that adequate controls were in place to address all 189 risks. Specifically, a core group of approximately 11 Project staff forms the Project's Risk Management Board. The Board meets regularly to review risk status and the necessity for action. In addition, the Project Manager is responsible for elevating major risks to the Goddard Center Management Council and the Space Communications and Navigation (SCaN) Office for action. From January 2008 through December 2009, Project management elevated and subsequently closed three major risks through the Goddard Center Management Council and SCaN. For example, Project management identified a small supplier's responsibility for providing a large quantity of low-noise amplifiers, reference generators, and frequency converters as having the potential to result in late deliveries and design, workmanship, and test issues that could affect the Project schedule. To mitigate this risk, Project management developed and implemented a 12-step risk mitigation plan that enabled them to make a determination that the likelihood of late deliveries or design, workmanship, or test issues was low. Management also identified and implemented mitigation strategies for procurement risks, by anticipating estimating and inflation errors, and design implementation risks in regard to structural changes that may become evident between TDRS K and L and previous TDRS.

Earned Value Management. Pursuant to applicable regulations, Boeing was required to demonstrate that the Government certified its EVM systems. Boeing provided TDRS

Project management a signed agreement, dated February 3, 2009, documenting that their EVM system is Government certified. The Honeywell contract, as an operations and maintenance contract, is not required to use EVM.

We found that Project management implemented EVM in accordance with the Project Plan and NASA requirements. Effective use of EVM enabled Project management to identify performance trends and variances from the management plan in a timely manner and use the information to make informed decisions and implement corrective action. For example, in the months prior to a March 2009 design review, EVM data indicated that the Project had overrun cost projections by 12 percent and that only 92 percent of the scheduled work had been completed. Project management analyzed the data and determined that the cost overrun resulted from the contractor underestimating engineering labor hours required to complete tasks, and the apparent schedule delay was due to an input error on the master schedule. Project management provided more realistic engineering labor hours and properly adjusted inputs to the master schedule, thus preventing future Project cost overruns and mitigating impact to the launch schedule.

NASA APPROPRIATELY ADMINISTERED TDRSS PROGRAM CONTRACTS

The Space Network Office and TDRS Project Office appropriately awarded, administered, and monitored development and support service contracts with Honeywell and Boeing, respectively. The contracts complied with Federal and NASA acquisition regulations, and contained clearly defined technical requirements. Program management provided sufficient oversight of contract implementation, and communications between NASA and the contractors mitigated acquisition risks.

Management of Contract with Honeywell Followed Contracting Procedures

In October 2003, NASA awarded a 5-year cost-plus-award-fee contract that includes provisions for indefinite-delivery, indefinite-quantity tasks (IDIQ tasks) to Honeywell for continuous operations and monitoring of the space communications network and providing and supporting engineering operations. When NASA awarded the contract, its estimated value for the core effort was $185.2 million, with a maximum value of $600 million for the IDIQ tasks. That value subsequently increased to $306.4 million for the core effort and $824 million for IDIQ tasks, primarily as a result of multiple bid protests by Honeywell following award of the follow-on contract to ITT Corporation on October 10, 2008, which resulted in a two-year extension of Honeywell's contract. Honeywell submitted four separate protests to the Government Accountability Office (GAO) and one to NASA, and ITT Corporation submitted one protest to NASA. (See Appendix B for specific details about the protests.) The current period of performance extends the contract until October 8, 2010, and includes an option for an additional 6-month period (through April 8, 2011) if necessary, pending the outcome of Honeywell's protest.

In examining the 2003 contract, we found that management and contracting personnel followed contracting procedures for awarding and administering the Honeywell contract and for monitoring Honeywell's performance, in accordance with the Federal Acquisition Regulation (FAR) and the NASA FAR Supplement guidelines.

The TDRSS Performance Evaluation Board[13] evaluates potential award fees every 6 months as defined in the award fee plan. We found that disbursements of award fees were made in accordance with contract terms and conditions.

[13] For an award-fee contract, the Performance Evaluation Board, consisting of a minimum of five voting members that includes the Board chairman, evaluates contractor performance and determines the amount of award fee the contractor will earn. The five members include one technical representative from another technical organization, one senior procurement official, and two other voting members.

Since the contract's inception, the contractor has received award fee ratings in the "very good"[14] range, with the exception of a "good" rating for the October 9, 2003, to April 8, 2004 period, and a "satisfactory" rating for the October 9, 2008, to July 8, 2009, period. According to NASA, factors that affected the satisfactory rating[15] included Honeywell's inability to retain critical skills and poor corporate decisions leading to unprecedented losses of highly experienced personnel. Additionally, performance on crucial tasks was unacceptable and Honeywell's difficulty in completing required deliverables resulted in schedule delays, cost increases, and an inability to meet external customer needs. Honeywell established a recovery plan and made significant progress in addressing NASA's concerns. Through June 2010, NASA made 12 award fee ratings to Honeywell representing approximately 85 percent of the available fee pool for these periods ($14,066,260 of the potential $16,467,816).

Management of Contract with Boeing Was Appropriate

In December 2007, NASA awarded a fixed-price-incentive-fee contract to Boeing for the development and delivery of TDRS K and L. The target price[16] of the base contract, which includes the development and delivery of TDRS K and L and modifications to the White Sands ground station, is $696.6 million with a ceiling price[17] of $772.4 million. The planned launch dates for TDRS K and L are 2012 and 2013, respectively; however, the contract includes a schedule incentive of up to $10 million if TDRS K is launched prior to December 2012. The contract also includes options for two additional spacecraft, TDRS M and N. If all options are exercised, the potential contract value is $1.2 billion with an 18-year period of performance.

This type of contract is used when supplies or services can be acquired at lower costs and, in certain instances, with improved delivery or technical performance by coupling the amount of profit to the contractor's performance. Furthermore, because TDRS K and L are not significantly different from previous satellites, NASA officials said Boeing's performance in developing and delivering TDRS H, I, and J made it advantageous to use a contract vehicle under which Boeing assumed responsibility for costs and an appropriate share of the risk.

Prior to beginning our audit, the OIG received an allegation that Boeing had submitted a low bid in order to win the contract and thereafter submitted waiver requests for technical requirements that increased NASA's cost. To evaluate the merits of this allegation, we

[14] NASA uses adjectival ratings – excellent, very good, good, satisfactory, poor/unsatisfactory – to rate performance under award-fee contracts.

[15] We did not independently evaluate NASA's rationale for making this determination.

[16] A fixed-price incentive contract includes a target price comprising a target cost, a target profit, a price ceiling, and a profit adjustment formula, which NASA and the contractor negotiate and establish prior to contract award. The target price represents the contract value at award.

[17] The price ceiling is the maximum that may be paid to the contractor, except for any adjustment under other contract clauses.

reviewed the original competition method and examined source selection information and subsequent contract modifications.

We found that NASA awarded Boeing the contract following a full and open competition in which two proposals were received. NASA evaluated both proposals in accordance with source selection procedures described in FAR Part 15 and the NASA FAR Supplement Part 1815. Boeing's proposal received a higher point score because of its technical approach, and had a lower overall cost to the Government following a cost-realism analysis.[18] In addition, Boeing's proposal took no exceptions to the contract terms and conditions or technical requirements.

We examined whether Boeing's proposal addressed all contract requirements and whether NASA granted change orders for requirements outside the original proposal. Boeing submitted 21 waiver requests to the Project Office following contract award (6 were later withdrawn by Boeing). According to Project officials, Boeing submitted these waivers following an integrated baseline review during which Project officials discovered that Boeing had failed to include several items such as component random vibration testing for bus units and a spacecraft modal test in its baseline schedule. Project management evaluated each request and its supporting documentation to determine whether it should grant the waiver. Of the 15 waivers evaluated, NASA approved 13 and rejected 2.

The approved waivers did not alleviate Boeing from performing any of the technical requirements and did not affect the price of the contract. For example,

- On February 23, 2009, Boeing submitted a waiver request related to the number of fasteners to be tested, use of current in-stock fasteners, and fasteners on existing and new ground support equipment. The Project's mechanical and structural engineer reviewed the request and determined that approving the waiver would not increase technical risk. However, NASA reserved the right to audit the fastener inventory and require additional testing. In addition, Boeing revamped its overall system for procurement of the fasteners to ensure there would be no additional risks because of waiver approvals.

- On June 8, 2009, Boeing submitted a waiver requesting a deviation from the military standard definition of "Maximum Expected Operating Pressure."[19] The Project's propulsion subsystem engineer and contracting officer granted the waiver after determining that Boeing had demonstrated that the workmanship of the manifold and component fabrications were proof-pressure tested above the

[18] Cost-realism analysis is the process of independently reviewing and evaluating specific elements of each offeror's proposed cost estimate to determine whether the estimated proposed cost elements are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the unique methods of performance and materials described in the offeror's technical proposal.

[19] Maximum Expected Operating Pressure refers to the wall strength of a pressurized cylinder, such as a pipeline or storage tank, and how much pressure the walls could safely hold before rupturing.

worst-case surge pressure and that waiving the requirement would eliminate the risk of a schedule delay.

In June 2010, NASA increased the contract value to $716.8 million after directing Boeing to procure and test ground spare parts and provide dual central processing unit redundant cross-strapping capability for the spacecraft emulators[20] to accommodate contingency operations tests. NASA initiated the contract modification to incorporate the ground spares to avoid future difficulties associated with purchasing spares with the same configuration as the production units, take advantage of efficiencies of a bulk buy purchase, realize efficiencies of testing units/items and spares at the same time, and minimize disruption to White Sands operations. A review board that assessed risk mitigation measures following a spacecraft emulator anomaly aboard the TDRS-9 spacecraft recommended the modification for the spacecraft emulators. Thus, contract modifications were not the result of Boeing attempting to increase contract costs but rather NASA's decision to incorporate these changes.

Accordingly, we found no evidence to support the allegation that Boeing "low bid" the contract in order to win the award and subsequently increased the cost through contract modifications.

The contract includes an incentive fee tied to Boeing's performance, completion of project milestones, and cost performance as evidenced in monthly and quarterly financial management reports. Using the information in these reports, NASA will determine the final amount of incentive fee earned by the contractor in accordance with the profit adjustment formula.[21] As of June 1, 2010, Boeing had received $28 million of the $78.7 million target fee paid upon successful completion of performance milestones as outlined in the contract.

NASA has contracted with Aerospace Corporation, a federally funded research and development center, to ensure the accuracy of the monthly and quarterly status reports. Aerospace Corporation employs technical personnel to oversee implementation of the contract requirements on-site at Boeing and provide NASA daily reports concerning project status. The NASA and Boeing teams conduct weekly schedule assessments to ensure Project management understands the impact of schedule variances to the Project. Additionally, the lead Goddard Project scheduler travels to the Boeing facility to participate in all relevant schedule working groups and meetings.

[20] The purpose of spacecraft emulators are to test flight software and provide operations training and procedure checkout.

[21] The profit adjustment formula is used to calculate the final profit earned by the contractor: when the final cost is less than the target cost, the final profit is greater than the target profit; conversely, when final cost is more than the target cost, the final profit is less than the target profit and could result in a net loss.

NASA NEEDS TO REVIEW ITS CURRENT REIMBURSABLE RATES TO ENSURE THEY ARE APPROPRIATE AND REASONABLE

NASA has not recalculated the TDRSS reimbursable rates since 2006. As a result, current NASA Program officials do not know whether the factors used to formulate the 2006 rates are still valid and, consequently, do not know whether the rates NASA is charging its customers are appropriate or reasonable. In addition, NASA has failed to update the Code of Federal Regulations to reflect current rates and other current policy and practice.

NASA Does Not Know Whether the Rates It is Charging Customers are Reasonable

TDRSS represents an investment by the U.S. Government of more than $5 billion since inception. According to 14 C.F.R. Subpart 1215.1, "Tracking and Data Relay Satellite System Use and Reimbursement Policy for Non-U.S. Government Users," NASA's objective is to operate TDRSS as efficiently as possible to the mutual benefit of all users. NASA structured its reimbursement policy "to purposely influence users to operate with TDRSS in the most efficient and orderly manner possible." For example, to prevent excessive use by any one user, the policy provides that users will be charged by the minute. In addition, according to the C.F.R., "a reasonable charge" should be made to TDRSS users. Accordingly, NASA has established user rates for various TDRSS services.

NASA Has Not Revised Rates. NASA has not revised TDRSS service rates since 2006. Moreover, the rates published in the current C.F.R. date to 1997. According to Program management personnel, they have not revised the rates since 2006 because they assumed another office was responsible for this task and because they did not possess the knowledge necessary to do so. In addition, NASA Program officials said they do not know what factors were used to formulate the 2006 rates. Accordingly, they do not know, and we were not able to determine, whether the rates NASA was charging reflected operating costs. The C.F.R. rates and the reimbursable service rates charged by NASA in 2009 are provided in Table 2.

Table 2. Commercial and Noncommercial Rates as Published in 14 CFR Part 1215 Compared with Rates Charged by NASA in 2009

	Commercial Rate		Noncommercial Rate	
Service Category	Published in C.F.R.	Charged by NASA in 2009	Published in C.F.R.	Charged by NASA in 2009
Single Access	$180	$119	$184	$131
Multiple Access Forward	$39	$29	$42	$29
Multiple Access Return	$13	$14	$13	$14

Sources: C.F.R. Part 1215 Appendix A provides the C.F.R. rates, and the Space Operations Mission Directorate provided the rates charged by NASA in 2009.

In October 2009, NASA directed a contractor staff member who had previously worked with the reimbursable formulas as a NASA employee to determine how the reimbursable rates were calculated in order to develop new rates with factors that reflect the current operating environment. Although the contractor employee was able to locate a logic document relating to the 2006 formula, the document did not reflect the cost factors considered or the actual formula. NASA told us it plans to develop a new formula that it will apply for FY 2011 rates.

Since NASA has not updated the rate in more than 4 years, there is no assurance that the charges are appropriate or reasonable, as required by C.F.R. §§ 1215.100, which states that

> this reimbursement policy has been established to purposely influence users to operate with TDRSS in the most efficient and orderly manner possible. Additionally, the reimbursement policy is designed to comply with the [Office of Management and Budget] Circular A-25 on User Charges, dated September 23, 1959, which requires that a **reasonable charge** [emphasis added] should be made to each identifiable recipient for a measurable unit or amount of Government service or property from which a special benefit is derived.

NASA Lost Institutional Knowledge During Multiple Reorganizations. During the 1980s and most of the 1990s, TDRSS operated as its own directorate from NASA Headquarters. In 1996, NASA transferred management responsibility for TDRSS to the Space Operations Management Office at the Johnson Space Center (Johnson). In 2001, NASA dissolved the Space Operations Management Office, and responsibility for TDRSS was transferred to the Office of Space Flight (later renamed the Space Operations Mission Directorate) at NASA Headquarters. Within the Space Operations Mission Directorate, responsibility for TDRSS falls under the Space Communications and Navigation (SCaN) Office. However, no personnel from offices with prior management responsibilities for TDRSS were working in the Program during our audit. Consequently, Program personnel did not possess the knowledge required to update the reimbursable rates and were unaware of the existence of the C.F.R. policy.

C.F.R. Provisions Do Not Accurately Reflect Current Procedures

The regulations in the C.F.R. pertaining to TDRSS were originally published in 1983 and, apart from minor revisions in 1991 and the revision to the rates in 1997, have not been updated. Thus, the provision is outdated and does not reflect current TDRSS operating procedures. For example, although the C.F.R. provides that payments be collected six months in advance of the service period, NASA does not require customers to remit funds that far in advance. Because the C.F.R. is "the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government," NASA should update the document to reflect current procedures. SCaN Office personnel said they plan to update Part 1215 to make it consistent with current TDRSS operating procedures.

With regard to collecting reimbursable payments, we found that NASA was collecting payments in advance, as required by C.F.R. §§ 1215.115, but not the required 6 months in advance. The C.F.R. divides the calendar year into two service periods – January through June and July through December – and states that the estimated cost of service for January through June is due the previous July 1 and will be billed 60 days prior to the payment due date. In other words, the customer must pay NASA 6 months in advance of the service period. NASA is not following the criterion requiring the 6-month advance payments because, according to Project management personnel, customers do not want to commit funds so far in advance of actual needs.

In addition, C.F.R. §§ 1215.101 states that memorandums of agreement concerning TDRSS use with its customers must be signed by the Associate Administrator for Space Operations. However, the position of the Associate Administrator for Space Operations has not existed since 1996, and at the time of our audit the Deputy Associate Administrator for the Space Operations Mission Directorate signs the memorandums of agreement. Nevertheless, we found that Goddard personnel signed the memorandums of agreement for TDRSS nonclassified customers.[22] In addition, C.F.R. §§ 1215.113 states that slew time (that is, the time it takes to reposition a satellite for the next project) will be charged to the customer. However, Goddard's support contractor (Honeywell) personnel did not charge nonclassified customers for slew time (although they did charge classified users) because the satellite scheduling system does not automatically account for it and they determined that the time of up to 2 minutes was negligible. Additionally, the Chief, Networks Integration Management Office, stated that they simply forgot to account for slew time, but will begin to account for it as required by the C.F.R.

SCaN Office personnel said they plan to update C.F.R. Part 1215 to make it consistent with current TDRSS operating procedures.

[22] Nonclassified customers include both commercial and noncommercial customers.

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

Recommendation 1. We recommended that the Associate Administrator for the Space Operations Mission Directorate direct the SCaN Deputy Associate Administrator to annually update TDRSS reimbursable rates so that they reflect current operating costs.

Management's Response. The Associate Administrator for the Space Operations Mission Directorate concurred, stating that the SCaN Program is updating the algorithm used to calculate reimbursable rates to ensure it produces reasonable rates, and that the required timing for updating the rates is appropriate. In addition, beginning with FY 2012, the SCaN Program will notify customers of rate changes on an annual basis. Management expects to complete its review of the algorithm by December 1, 2010. Although NASA's formal response did not provide a specific completion date (Fall 2010), the SCaN Office's Director for Network Services stated in a subsequent e-mail that these actions would be completed by December 1, 2010.

Evaluation of Management's Response. Management's planned action is responsive. The recommendation is resolved and will be closed after we verify completion of the corrective action.

Recommendation 2. We recommended that the Associate Administrator for the Space Operations Mission Directorate direct the SCaN Deputy Associate Administrator to revise 14 C.F.R. Part 1215, "Tracking and Data Relay Satellite System (TDRSS)," to reflect current operating procedures and rates.

Management's Response. The Associate Administrator for the Space Operations Mission Directorate concurred, stating that the SCaN Program is reviewing the Code of Federal Regulations to determine if the regulation is still needed and, if so, will take steps to ensure it reflects the current TDRSS operating procedures and rates. Management expects to complete the proposed action by December 1, 2010. Although NASA's formal response did not provide a specific completion date (Fall 2010), the SCaN Office's Director for Network Services stated in a subsequent e-mail that these actions would be completed by December 1, 2010.

Evaluation of Management's Response. Management's planned action is responsive. The recommendation is resolved and will be closed after we verify completion of the corrective action.

LACK OF INTERNAL CONTROLS LED TO COLLECTION ISSUES AND LOSS OF REVENUE

The lack of internal controls in Goddard's Networks Integration Management Office led to a loss of revenue for NASA: financial responsibilities were neglected; and reimbursements were not tracked, billed, or received during an employee's extended absence. This occurred because the Networks Integration Management Office did not have a contingency plan for continuity of operations or a standardized method of calculating reimbursements for classified and nonclassified projects. As a result, NASA did not receive reimbursements from nonclassified customers in a timely manner and did not recoup all payments owed for provision of TDRSS services.

Reimbursables Were Not Handled Consistently

The Networks Integration Management Office at Goddard provides mission services to spacecraft and science customers. The Office provides spacecraft tracking and data acquisition options, assistance with mission-unique communications requirements, and assistance in requirements definition. The Office is also responsible for collecting TDRSS user fees from nonclassified users. Goddard's Space Network Project is responsible for collecting user fees from classified users.

Accounts for classified and nonclassified TDRSS customers are handled by two different financial managers who maintain separate customer records and have different operating procedures. The financial manager for nonclassified accounts bills customers a percentage to cover costs for Center Management and Operations (CM&O)[23] based on the estimated cost of the launch. After the launch is completed and the number of minutes used is determined, this financial manager adds a percentage for award fees to the cost of the minutes used. However, the financial manager for classified accounts said she considers CM&O costs and award fees to be included in the per-minute charge and therefore does not add this amount to her customers' charges.

As discussed above, the reimbursable rates have not been recalculated for several years and NASA does not know what factors were included in the formula used to calculate those rates, we were unable to determine whether either of the financial managers was correctly charging customers. The former NASA employee hired to recalculate the usage rates stated that all maintenance and operations costs associated with TDRSS are included in the per-minute rate, and costs for award fees and CM&O are part of those rates. However, he could not provide documentation to substantiate that statement. In any

[23] The Center Management and Operations budget consolidates the overhead costs from the nine NASA field centers, not including the Jet Propulsion Laboratory. CM&O was previously known as General and Administrative costs.

event, until this issue is resolved NASA may be overcharging some customers and undercharging others.

Lack of a Contingency Plan and Inaccurate Advice Led to Loss of Revenue

Required duties were not performed during a 6-month period, from March 28, 2008, through September 14, 2008, when the nonclassified reimbursables resource analyst went on extended leave and no one was brought in to replace her. Specifically, funds were not obligated to TDRSS reimbursable projects for minutes used and, in some cases, government customers were not billed in a timely manner and therefore the funds that would have been used to pay for particular service periods were no longer available from a budgetary perspective. For example, approximately $31,500 had to be returned to the Missile Defense Agency because NASA did not bill the Agency before the available funds for that service period expired.

During the 6-month vacancy, NASA did not bill a customer who owed $585,000 for services rendered. Later, the customer claimed insolvency prior to NASA receiving payment. The customer launched its rocket in January 2008. However, NASA did not bill the customer until June 9, 2009. The company filed for bankruptcy on June 22, 2009 and NASA ended up recovering only $200,000 from the company.

The current financial manager returned nonexpiring funds, or no-year-authority funds, to six customers because of miscommunication with the Regional Finance Office. The financial manager was told by Regional Finance Office staff that the funds at issue expired after 2 years. However, when we requested documentation that the funds had expired, we received information showing they had not. Therefore, we concluded that approximately $27,200 in nonexpiring funds had been inappropriately returned to customers. Upon further review, documentation maintained by the Regional Finance Office showed that the period of performance for the six customers had expired and on that basis the funds were rightfully returned to the customers. However, according to the financial manager, the information about the period of performance expiring had not been communicated to her; if it had been, she could have been taken steps to extend the period of performance and avoid returning the customers' funds.

The Network Integration Management Office informed us that they do not plan to pursue collection of the approximately $58,700 in returned funds (the $31,500 to the Missile Defense Agency plus $27,200) because the charges were not billed in a timely manner and because of the costs involved in collecting the payments.

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

Recommendation 3. We recommended that the Chief, Networks Integration Management Office, establish and document internal control procedures to ensure a continuity of operations and timely billing of TDRSS service fees.

Management's Response. The Associate Administrator for Space Operations concurred, stating that the Networks Integration Management Office has hired additional staff, is updating and examining each reimbursable account monthly during a Business Status Review, and will document the step-by-step process for handling the reimbursable accounts so that written guidance will be available to employees. Management expects to complete the proposed action by November 15, 2010.

Evaluation of Management's Response. Management's planned action is responsive. The recommendation is resolved and will be closed after we verify completion of the corrective action.

Recommendation 4. We recommended that the Chief, Networks Integration Management Office, establish a standardized method of calculating reimbursements for classified and nonclassified projects.

Management's Response. The Associate Administrator for Space Operations concurred, stating that a common process is being developed and will be employed within the Goddard Exploration and Space Communications Projects Division for both classified and nonclassified projects. Management expects to complete the proposed action by October 25, 2010.

Evaluation of Management's Response. Management's planned action is responsive. The recommendation is resolved and will be closed after we verify completion of the corrective action.

APPENDIX A

Scope and Methodology

We performed this audit from July 2009 through August 2010 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We reviewed planning, financial, and scheduling documents and conducted interviews with Project officials to determine that the TDRS K and L Project Plan was effectively executed and that the Project is on schedule and meets technical requirements. We reviewed the TDRS K Program Commitment Agreement, which provides the TDRS K and L launch delivery dates. We found that the dates were in agreement with the contractual launch dates provided in the Boeing TDRS K contract, dated December 28, 2007. Additionally, we reviewed monthly and quarterly status reports from the TDRS K Project Office and Boeing and found they were in agreement with the Program Commitment Agreement.

We also reviewed the preliminary design review and compared it to the TDRS K Project documents, NASA Procedural Requirements, and standard business practices to determine that the TDRS K Project implemented effective risk and earned value management. In addition, we reviewed Boeing Satellite Systems and Honeywell Solutions Technology Inc. contracts and requirements for compliance with U.S. laws, regulations, and NASA Procedural Requirements and regulations to determine that there was effective administration of the TDRS K design and development and support service contracts. We compared the results to the most current weekly, monthly, and quarterly status reports for internal controls.

During our review, we concluded that 14 C.F.R. Part 1215 did not reflect current operating procedures for determining how reimbursables are charged, billed, or received. We also reviewed lists of nonclassified reimbursable customers and reimbursable rates charged for minutes used for the period January 1, 2008, through August 7, 2009. For classified missions, we reviewed the same documents for fiscal years 2008 and 2009. For internal controls related to the continuity of operations, we reviewed cost estimates, invoices, and financial reports from the Networks Integration Management Office.

Finally, to determine whether all nonmanagerial Project staff were able to report identified risks, we interviewed nonmanagerial Project staff. As of June 2009, the TDRS Project Office comprised 72 positions: 18 managers, 2 support staff, and 52 nonmanagerial staff. Of the 52 nonmanagerial staff, we interviewed 38, 3 positions

were vacant, 6 of the staff were no longer with the Project, and the remaining 5 members were unavailable during the interview process.

Use of Computer-Processed Data. We used computer-processed data to determine our reimbursable mission universe. We found discrepancies in the computer-processed data concerning the consistency of the data provided. We brought the discrepancies to the Networks Integration Management Office's attention and worked closely with Agency officials to determine the process by which the Networks Integration Management Office records, tracks, and updates launch missions to the extent the launch missions records are complete and accurate. The results showed that databases key to our review were not consistent and the data was incomplete. Therefore, we determined the data was not sufficiently reliable. However, by comparing the data received, we were able to identify a usable universe.

Review of Internal Controls

We reviewed NASA policies, procedures, and internal controls governing the award and administration of the Boeing and Honeywell contracts for compliance with Federal and NASA acquisition regulations. We obtained and reviewed the Procurement Management Survey Report dated March 23 to April 3, 2009, performed by the Headquarters Procurement Office. We found that the NASA Headquarters Office of Procurement reviewed the TDRS K Project using NASA Policy Directive (NPD) 5000.2A, "Uniform Methodology for Determination of Small Business Subcontracting Goals," dated June 14, 2000. We reviewed NASA policies, procedures, and internal controls related to the TDRSS contracts and no issues were found. However, we found that the Code of Federal Regulations related to the management of TDRSS operations does not reflect current operating procedures and that there is no continuity of operations plan in effect for collection of TDRSS reimbursables.

Prior Coverage

During the last 5 years, neither NASA nor the Government Accountability Office (GAO) has issued a report of particular relevance to the subject of this report. However, we found NASA issued two older reports, 1996 and 1997, concerning the recording and usage of revenues generated by the C-band agreement.[24] In addition, GAO issued four older reports. A report issued in 1991 concerned scheduling the usage of TDRSS. Another report issued in 1990 assessed ground stations and terminal use. A third report issued in 1989 involved the closing of ground stations, stating NASA had not performed a risk assessment of closing certain ground stations. The fourth report, issued in 1980,

[24] In 1990, NASA entered into the C-band agreement with Columbia Communications Corporation (Columbia) for Columbia to use excess C-band capacity from TDRS-4 and TDRS-5. Columbia, in turn, leased the excess C-band capacity to commercial customers for international telecommunications purposes.

concerned displacement of TDRSS workers due to ground station closures. Access unrestricted reports over the Internet at http://oig.nasa.gov/audits/reports/FY10 (NASA) and http://www.gao.gov (GAO).

National Aeronautics and Space Administration

"Commercial Use of NASA's Tracking and Data Relay Satellite System (TDRSS)" (IG-97-026, June 24 1997)

"Final Rapid Action Report Recording of Revenues Generated by the Commercial Use of NASA's Tracking and Data Relay Satellite System (TDRSS)" (IG-97-010, December 17, 1996)

Government Accountability Office

"Space Communications: Better Understanding of Scheduling System Limitations Needed" (GAO/IMTEC-91-48, September 17, 1991)

"Space Communications: Performance of NASA's White Sands Ground Terminal" (GAO/IMTEC-90-56, May 29, 1990)

"Space Operations: NASA's Communications Support for Earth Orbiting Spacecraft" (GAO/IMTEC-89-41, April 7, 1989)

"Staffing Implications of Tracking and Data Relay Satellite System and Remote Sensing Activities" (PSAD-80-47, May 28, 1980)

PROTESTS OF SUPPORT SERVICE CONTRACT AWARD

Honeywell Technologies Solutions, Inc. holds the current contract for the continuous operations and monitoring of NASA's space communications network. Following a competitive procurement, NASA selected ITT Corporation (ITT) to continue the operations and monitoring services.

Following contract award to ITT on October 10, 2008, five protests were submitted concerning NASA's evaluation of the bidders' past performance information. Honeywell submitted three separate protests to GAO and one to NASA, and ITT submitted one protest to NASA.

On October 20, 2008, Honeywell submitted the first protest to GAO claiming NASA's evaluation of the proposals and subsequent source selection decision was improper. On January 27, 2009, GAO ordered that NASA reevaluate ITT's past performance. After reevaluation, NASA awarded the contract to ITT on April 7, 2009.

Following this award, Honeywell filed a second protest with GAO on April 24, 2009, claiming NASA irrationally evaluated the past performance of ITT and its proposed team members, and as a result, NASA's best value decision was unsupportable. GAO held a hearing on June 25, 2009, to determine whether NASA's reevaluation of ITT's past performance was proper. On June 30, 2009, NASA notified GAO of its intent to take corrective action in response to the second protest by reevaluating updated past performance information obtained from each bidder, Internet resources, and direct contact with references. After the corrective action was completed, NASA again selected ITT for the Space Communications Network Services contract.

On July 13 and 20, 2009 respectively, Honeywell and ITT submitted Agency-level protests regarding NASA's planned corrective action. On August 11, 2009, the NASA contracting officer denied Honeywell's protest. The ITT protest was also denied on August 11, 2009 as untimely.

On August 21, 2009, Honeywell submitted its third protest to GAO claiming NASA's corrective action was improper because it was limited to the issue of past performance. GAO denied this protest on November 23, 2009, stating the agency decision to limit corrective action to the area of past performance is unobjectionable where it is sufficient to remedy the procurement impropriety at issue.

On July 14, 2010, the U.S. House of Representative's Committee on Science and Technology notified the NASA Administrator about their concerns that the Space Communications Network Services competition managed by Goddard Space Flight Center's Procurement Office was not conducted in a fair and open manner. In addition, they questioned the integrity of NASA's contract management and contracting processes

as well as the conduct of Agency and Goddard legal offices. On July 20, 2010, Honeywell submitted their fourth protest to GAO on NASA's third selection of ITT as the successful offeror.

NASA hopes to award the contract prior to the early October 2010 expiration of the current contract.

MANAGEMENT COMMENTS

National Aeronautics and Space Administration

Headquarters
Washington, DC 20546-0001

September 8, 2010

Reply to Attn of: Space Operations Mission Directorate

TO: Assistant Inspector General for Audits

FROM: Associate Administrator for Space Operations

SUBJECT Response to Draft Audit Report, "Review of NASA's Tracking and Data Relay Satellite System" (Assignment No. A-09-014-00)

In response to your draft report dated August 19, 2010, we are providing our responses to the findings. Actions taken in response to specific recommendations are discussed below:

1. *Recommendation: "Annually update TDRSS reimbursable rates so that they reflect current operating costs."*

NASA concurs and endorses this recommendation. The Space Communications and Navigation (SCaN) Program has established a team comprised of program staff, and Goddard Space Flight Center (GSFC) personnel to update the "cookbook" algorithm to ensure the calculation of the rate is reasonable and that the required timing for updating the rates is appropriate. The team is expected to complete its activities in the Fall of 2010. The SCaN program will document the rate and notify customers on an annual basis starting with FY2012.

2. *Recommendation: "Revise 14 C.F.R. Part 1215, "Tracking and Data Relay Satellite System (TDRSS)," to reflect current operating procedures and rates:"*

NASA concurs and endorses this recommendation. The SCaN Program has established a team comprised of program staff and GSFC personnel to review the existing Code of Federal Regulations (CFR) and determine if the CFR is still needed and if so, to ensure it reflects the present system and program configuration and accurately reflects all information required. Upon completion of the team activities the SCaN Program will take the necessary steps to update the CFR, as required. The team is expected to complete its efforts in the fall of 2010.

3. *Recommendation: Establish and document internal control procedures to ensure a continuity of operations and timely billing of TDRSS service fees.*

NASA agrees with and endorses this recommendation. This issue evolved due to an employee's unexpected medical absence. Since that time, NASA's Networks Integration

and Management Office (NIMO) has hired a Financial Manager to oversee the non-classified reimbursable accounts, and two additional Resource Analysts to assist in the tracking and processing involved in finalizing the reimbursable accounts. The increase in business staff greatly minimizes the risk of this issue reoccurring in the future.

Additionally, NASA has been conducting a monthly internal Business Status Review where each reimbursable account is updated and examined from initiation to closure. Lastly, in direct response to this recommendation, NASA will document the step-by-step process for the handling of reimbursable accounts. In the event of a prolonged absence of any key employee, these procedures would sufficiently educate and guide any replacement personnel, in the establishment, tracking, and closure of any reimbursable mission/account.

These procedures will be documented as NIMO Work Instruction(s), which will be placed in the GSFC Exploration and Space Communications Projects (ESCP) Division document control system - for easy access, periodic review, and to maintain configuration control. This reimbursable Work Instruction will be submitted to the NIMO Configuration Control Board by November 15, 2010.

4. *Recommendation: Establish a standardized method of calculating reimbursements for classified and non-classified projects.*

NASA agrees with, and supports, the stated recommendation. NASA is coordinating the creation of a common written process that will be employed within the GSFC ESCP Division for both classified and non-classified reimbursable customers and accounts. This process will be documented as a GSFC Program Guidance (PG) document, which will be approved through the ESCP Division Configuration Control Board, and the Space Communication and Navigation Program at NASA HQ. The approved PG document will reside in the GSFC Directives Management System. The reimbursable PG document will be submitted for review on October 25, 2010.

Thank you for your valuable input to our TDRSS operation activities. We believe implementations of these findings will allow us to provide better services to our customers.

Sincerely,

William Gerstenmaier

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Major Contributors to the Report:

Raymond Tolomeo, Director, Science and Aeronautics Research Directorate
Diane Choma, Project Manager
Bill Falter, Auditor, Team Leader
Theresa Becker, Procurement Analyst
Gina Davenport-Brazeau, Auditor
Cindy Stein, Aerospace Technologist

SEPTEMBER 21, 2010

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