NASA OFFICE OF INSPECTOR GENERAL

SEMIANNUAL REPORT

APRIL 1–SEPTEMBER 30, 2015

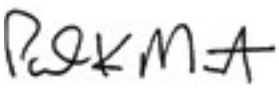
FROM THE INSPECTOR GENERAL

As we head into December, the unfortunate pattern of the Federal Government beginning a new fiscal year without an approved budget has repeated itself with a continuing resolution funding NASA through the middle of the month. Failure to receive a full-year appropriation compounds the challenges facing Agency leaders in effectively managing NASA's varied programs, perhaps most prominently its plans to transport astronauts to the International Space Station on commercial U.S. vehicles by late 2017. Given its importance, the Office of Inspector General initiated a follow-up audit this reporting period that will examine the status of the Agency's Commercial Crew Program.

In July, I testified before the U.S. House of Representatives Subcommittee on Space about the challenges NASA faces in operating the International Space Station, particularly in light of the loss of three cargo resupply flights during the preceding 8 months. The Office of Inspector General has issued five reports related to this topic over the past 2 years, including reviews on NASA's plans to extend Station operations until 2024 and the Agency's contracts with private companies to fly cargo and crew to the Station. Most recently, we examined NASA's response to the October 2014 launch failure of an Orbital Sciences Corporation cargo resupply flight and its impacts on Station operations.

Our Office of Investigations continues to pursue allegations involving misuse of NASA funds and misconduct by NASA employees, contractors, and grant recipients. During the past 6 months, the Office of Inspector General investigated matters involving contract and grant fraud, theft, cyber attacks, false statements, and ethical violations.

This Semiannual Report summarizes the NASA Office of Inspector General's activities and accomplishments between April 1, 2015, and September 30, 2015. We hope you find it informative.



Paul K. Martin
Inspector General
November 27, 2015

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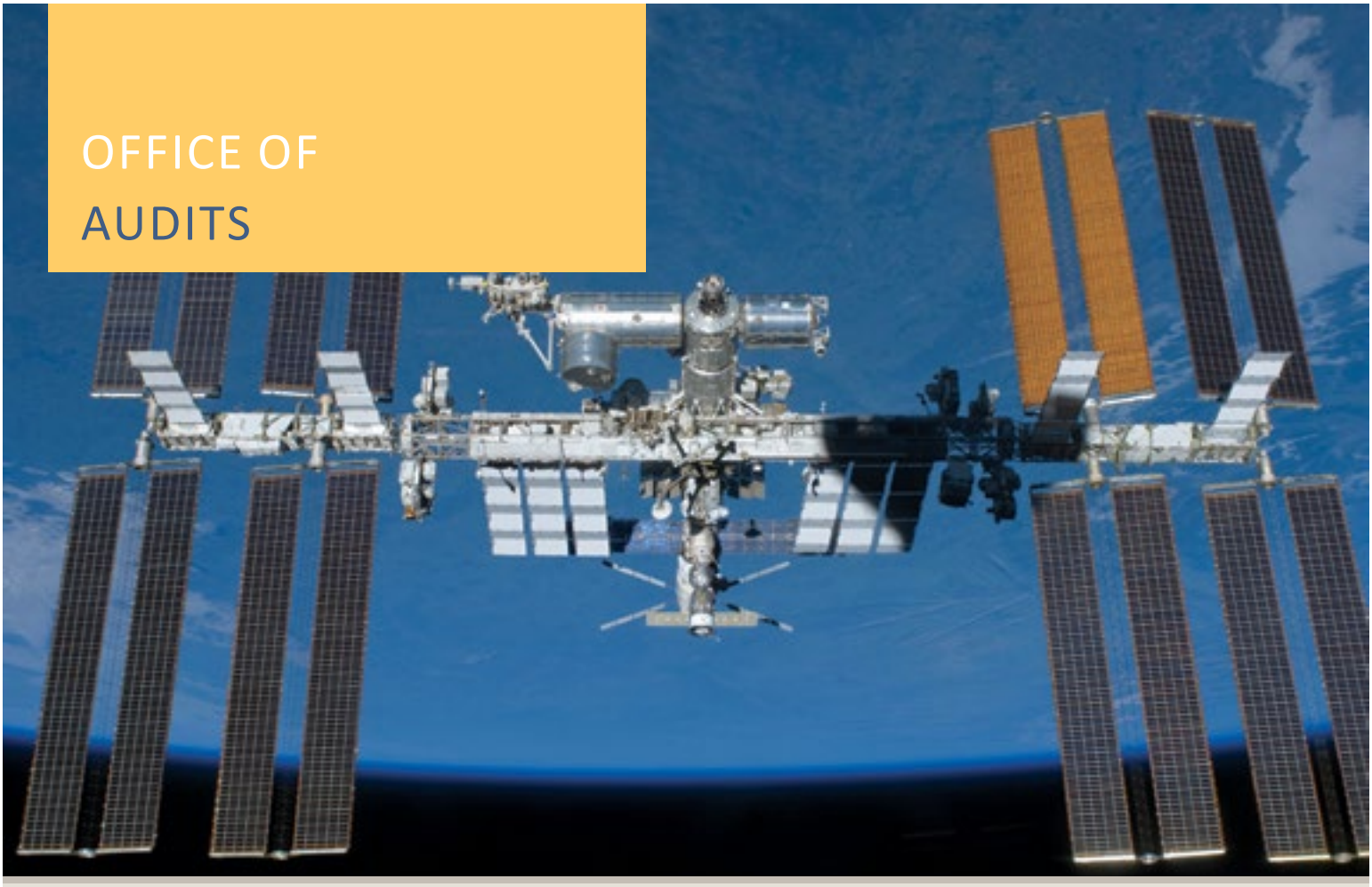


The International Space Station

SPACE OPERATIONS AND HUMAN EXPLORATION

Space operations and human exploration are among NASA's most highly visible missions. At the same time the Agency operates the International Space Station (ISS or Station) in low Earth orbit and manages the supporting commercial crew and cargo programs – including two cargo launch failures in 8 months – it is looking toward the future with the development of the Space Launch System (SLS), Orion crew capsule, and supporting launch and ground infrastructure.

NASA'S RESPONSE TO ORBITAL'S OCTOBER 2014 LAUNCH FAILURE: IMPACTS ON COMMERCIAL RESUPPLY OF THE INTERNATIONAL SPACE STATION

On October 28, 2014, the third in a series of NASA-contracted resupply missions to the ISS by Orbital Sciences Corporation (Orbital) failed during lift-off, causing the vehicle to crash near the launch pad and destroying the company's Antares rocket and Cygnus spacecraft as well as all cargo aboard. The Virginia Commercial Space Flight Authority's (VCSFA) launch pad and supporting facilities at NASA's Wallops Flight Facility (Wallops) on Virginia's Eastern Shore also sustained damage. In the aftermath of the failure, Orbital suspended its cargo resupply missions until completion of an investigation and acceptance by NASA of the company's Return to Flight Plan.

NASA's $1.9 billion Commercial Resupply Services (CRS-1) contract with Orbital required the company to transport 18.6 metric tons of supplies and equipment (upmass) to the Station over eight flights by the end of 2016. Orbital's Return to Flight Plan – approved by NASA in January 2015 – calls for the company to deliver its remaining 13 metric tons to the ISS by flying four rather than the five flights planned under the original schedule. Two of these flights will use another company's rocket, the Atlas V, while the remaining flights will use a revamped model of Orbital's Antares rocket.

We examined NASA's response to Orbital's October 2014 launch failure and its impacts on commercial resupply of the ISS. As part of this review, we assessed the technical and operational risks of Orbital's Return to Flight Plan, NASA's efforts to reduce the financial risk associated with its contract with Orbital, the progress of repairs at Wallops, and the procedure for investigating the cause of the failure.[1]

Orbital's Return to Flight Plan contains technical and operational risks and may be difficult to execute as designed and on the timetable proposed. First, although the Atlas V has a strong flight record and is a suitable rocket for Orbital missions, the company will be integrating its Cygnus capsule with the Atlas rocket for the first time. Second, Orbital must accelerate the development of its modified Antares launch system, refitting it with new engines for two planned launches in 2016. This tight schedule does

[1] On June 28, 2015, a mission by NASA's other commercial cargo provider, Space Exploration Technologies Corporation, exploded shortly after takeoff, and the Office of Inspector General opened a review to examine NASA's response to this loss.

Orbital launch failure

not include a test flight for the modified system and provides limited opportunities for qualification and certification testing. Third, although NASA has increased monitoring of Orbital's milestone plan and RD-181 engine testing for the modified Antares, the Agency has not conducted detailed technical assessments of the modified system and the associated qualification testing results. Finally, we believe Orbital's plan to drop one of its scheduled resupply flights may disadvantage NASA by decreasing the Agency's flexibility in choosing the type and size of cargo the company transports to the ISS.

In addition, although NASA will not pay Orbital more than the fixed price of $1.9 billion agreed to for the original eight flights, the Agency did not take advantage of provisions in the contract that could have reduced its costs by up to $84 million. Specifically, when flight schedules slipped such that Orbital was making multiple flights in a year, NASA did not invoke a contract provision allowing for an adjustment to the mission pricing worth as much as $21 million, but instead received other nonmonetary considerations with an assessed value of only $2 million. Agency officials contend that invoking this provision may have reopened negotiations on pricing and potentially given Orbital the opportunity to press for higher prices, which could have resulted in the Agency ultimately paying more. However, negotiations and modifications to the contract were already underway as a result of the schedule delays, and we believe it would have been in NASA's interest to at least broach the issue with Orbital.

Further, when calculating the cost to NASA for the remaining four flights, Orbital did not use the per-kilogram pricing in the original contract and instead divided the price for the cancelled eighth mission by its contractual upmass requirement to arrive at a revised price per kilogram. By accepting this pricing structure, NASA committed to paying $65 million more for these missions than the Agency would have paid if the original pricing had been used. While Orbital offered NASA some consideration in exchange for the adjustments made in its Return to Flight Plan, we question the value of these services. In addition, NASA recently took actions that will limit its ability to slow milestone payments caused by schedule delays for future cargo resupply missions, effectively increasing the Agency's financial risk for its follow-on commercial resupply contract.

The Space Act Agreement between NASA and VCSFA also specified that VCSFA was required to obtain insurance at no cost to NASA to cover claims for liability and damage to NASA property, have insurance for its own property, and waive all claims against the Government for any damage arising under the Agreement. However, although NASA officials stated that VCSFA intended to self-insure for damages resulting from launch operations, it is not clear from correspondence between VCSFA and NASA that this issue was understood or agreed upon by both parties. As a result, $5 million of NASA funds intended for other space operations projects were used to help fund the repairs.

Finally, although Orbital's Accident Investigation Board satisfies the requirements of the company's Federal Aviation Administration license and the CRS-1 contract, the company's investigation lacks the level of independence required of NASA Mishap Investigation Boards.

In order to reduce schedule, performance, and financial risks in NASA's CRS-1 contract and any similar future contracts, we made several recommendations, including that the

Associate Administrator for Human Exploration and Operations complete a detailed technical assessment of Orbital's revamped Antares rocket, use available contractual provisions to ensure the best value to the Government when making equitable adjustments due to a contractor's deficiency, ensure mission pricing and payment are continually updated, and continue to incorporate lessons learned during CRS-1 into follow-on contracts and during the evaluation of return to flight plans. Further, in order to protect the United States against claims for damages caused by commercial space flight operations, we recommended the NASA General Counsel establish procedures to ensure that insurance policies adhere to agreement requirements and provide adequate financial liability and damage coverage. Finally, to address concerns regarding the independence of accident investigation boards, we recommended the Associate Administrator for Human Exploration and Operations consider whether relevant contract provisions should be revised to more closely align with NASA Mishap Investigation Board procedures.

NASA concurred with six of seven recommendations and described corrective actions; however, our recommendation about protecting the Agency against claims for damages like those at Wallops resulting from the launch failure remains unresolved.

NASA's Response to Orbital's October 2014 Launch Failure: Impacts on Commercial Resupply of the International Space Station (IG-15-023, September 17, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-023.pdf (report)

https://oig.nasa.gov/Video/RBowman_09172015.html (video)

AUDIT OF NASA'S MANAGEMENT OF INTERNATIONAL SPACE STATION OPERATIONS AND MAINTENANCE CONTRACTS

The United States has invested almost $78 billion in the ISS over the last 21 years, and going forward NASA plans to spend between $3 and $4 billion annually to maintain and operate the Station, including transportation for crew and cargo. To provide services for the ISS, NASA utilizes 31 contracts valued at approximately $39 billion that are managed by personnel at Johnson Space Center, Kennedy Space Center, and Marshall Space Flight Center. Twenty of these contracts, worth about $29 billion, are cost-type contracts. NASA's largest ISS contract is with The Boeing Company (Boeing) for the design, development, test, and evaluation of hardware and software required to operate the Station under a cost-plus-award-fee contract that has grown in value to $17.7 billion over the past 22 years.

For this audit, we reviewed nine ISS operations and maintenance cost-type contracts and two ISS Program-funded contracts managed at Marshall Space Flight Center in order to determine whether NASA's contract administration and oversight processes are sufficient to avoid incurring unnecessary costs on the contracts the Agency utilizes to operate and maintain the ISS.

The Agency has taken a number of actions to control the operations and maintenance costs of the ISS Program, including openly competing contracts and eliminating some requirements from Boeing and other contracts. Between fiscal years (FY) 2011 and 2015, the Program reduced these costs by $1.8 billion. However, given the unique operating environment of the ISS and the inherent challenge of operating at a flat operations' budget of $1.3 billion beginning in FY 2018, it is unclear whether these strategies will result in future cost savings.

Additionally, while the ISS Program has worked to control costs by evaluating contract types and reviewing requirements, similar to findings in several prior award-fee audits, we found instances

in which the final award-fee scores and payments were not supported by the written evaluations. As a result, we question between $500,000 and $700,000 of award-fee payments made between October 2012 and February 2014.

To improve ISS contracts, we recommended NASA's Assistant Administrator for Procurement, in conjunction with the ISS Program Manager, (1) take steps to remedy the questioned award-fee payments as appropriate and (2) ensure future award-fee evaluation scores are in alignment with Federal and Agency guidance and properly documented to accurately reflect contractor performance in award fees paid. NASA concurred with our recommendations, but we did not consider their actions responsive and the recommendations are unresolved.

Audit of NASA's Management of International Space Station Operations and Maintenance Contracts (IG-15-021, July 15, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-021.pdf

ONGOING AUDIT WORK

Audit of NASA's Efforts to Manage Health and Human Performance Risks for Space Exploration

Human space flight inherently involves a high degree of risk and, accordingly, NASA must make numerous decisions that balance human health and safety risks, technological feasibility, and financial costs against mission necessity. We are examining NASA's efforts to achieve these objectives for human exploration beyond low Earth orbit.

NASA's Management of Space Technology Projects

To enable crewed missions to reach destinations beyond the Moon beginning in 2025 and crewed missions to orbit Mars by the mid-2030s, NASA has invested in a large number of exploration technology projects. We are examining NASA's management of these projects.

Review of NASA's Efforts to Partner with International Space Agencies

NASA leverages partnerships with international space agencies as a way to share the costs, risks, and rewards of its various programs and projects. Nonetheless, NASA faces financial, political, and legal constraints that may impede international cooperation. These constraints may result in inefficient Agency operations and lost opportunities to pursue and sustain key mission areas such as long-term space exploration, space technologies, science missions, and aeronautics research. We are examining NASA's efforts to partner with international space agencies.

Audit of the Orion Multi-Purpose Crew Vehicle

Orion is being developed to take astronauts beyond low Earth orbit to the Moon, an asteroid, and Mars. The capsule will have several primary capabilities, including emergency abort, atmospheric reentry from deep space, and crew life support for an extended period of time. We are evaluating NASA's management of the Orion Program relative to achieving technical objectives, meeting milestones, and controlling costs.

Audit of NASA's Management of the Near Earth Network

The Near Earth Network (NEN) provides science missions in low Earth orbit with tracking, telemetry, and command services needed to control spacecraft and transmit data. We are assessing how the NEN is managing risks and adjusting capabilities to meet current and future requirements within cost, schedule, and performance goals and managing Network information technology and physical security risks.

Follow-up Audit of NASA's Commercial Crew Program

The Commercial Crew Program was formed to facilitate development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable, and cost-effective access to and from the ISS and low Earth orbit. We are evaluating whether the Program is meeting its planned cost and schedule goals and examining how programmatic risks and certification requirements are being managed.

Audit of NASA's Spaceport Command and Control System Software Development

NASA is developing the Spaceport Command and Control System software that will control the operation of ground equipment at Kennedy Space Center – pumps, motors, valves, and power supplies – needed to launch spacecraft, including the SLS rocket and the Orion spacecraft. We are examining whether NASA is effectively managing the development effort.

NASA's Response to SpaceX's June 2015 Launch Failure: Impacts on Commercial Resupply of the International Space Station

In June 2015, Space Exploration Technologies Corporation's (SpaceX's) seventh cargo resupply mission failed shortly after launch from Cape Canaveral in Florida, destroying more than 5,400 pounds of science and research, crew supplies, and vehicle hardware bound for the ISS. We are examining NASA's efforts to ensure the ISS is adequately supplied in light of the SpaceX launch failure.

SpaceX vehicle prior to launch failure

Welding sections of the SLS rocket at NASA's Michoud Assembly Facility

ACQUISITION AND PROJECT MANAGEMENT

In the current environment of constrained budgets for Federal agencies, effective contract, grant, and project management is more critical than ever. Through its audits, the Office of Inspector General (OIG) helps ensure NASA engages in sound procurement and acquisition practices that provide the Agency and taxpayer with the best possible value.

AUDIT OF NASA'S JOINT COST AND SCHEDULE CONFIDENCE LEVEL PROCESS

Throughout its history, NASA has struggled with accurately predicting the amount of time and money required to complete its space flight projects. The resulting cost and schedule overruns have in turn led to challenges in the project development process, the diversion of funding from other projects, and an overall reduction in the number and scope of projects the Agency can undertake. Over the years, studies have identified several root causes for NASA's challenges in producing accurate cost and schedule estimates. While some of the causes are outside the Agency's control, NASA has developed tools that can improve the fidelity of its cost and schedule estimates. To this end, since 2006 NASA has incorporated progressively more sophisticated probabilistic estimating techniques into Agency policy, culminating in 2009 with the formal adoption of a Joint Cost and Schedule Confidence Level (JCL) requirement.

A JCL analysis generates a representation of the likelihood a project will achieve its objectives within budget and on time. The process uses software tools and models that combine cost, schedule, risk, and uncertainty to evaluate how expected threats and unexpected events affect a project's cost and schedule. To generate this data, project managers develop comprehensive project plans, inputs, and priorities that integrate costs, schedules, risks, and uncertainties. NASA officials contend that gathering this data encourages better communication among project personnel; improves cost, schedule, risk, and uncertainty analyses; and fosters an understanding of how project elements impact one another. Accordingly, a JCL analysis not only establishes the basis for proposing program and project budgets, but may improve project planning and provide stakeholders with the rigor and documentation to better justify funding requests. Since 2009, NASA has completed a JCL analysis for 22 projects with a combined price tag of more than $49 billion.

We initiated this audit to determine whether NASA had implemented appropriate controls and procedures to establish a JCL process capable of improving cost and schedule estimates and therefore providing more reliable information to decision makers.

Based on our review of these 22 projects, it appears the JCL policy is having a positive impact on NASA's historical challenges with cost and schedule fidelity. That said, the process is relatively new, still evolving, and not a one-stop solution to solving all root causes of cost overruns and schedule delays. Specifically, the process has inherent limitations in that, like any estimating

SLS rocket engine test at Stennis Space Center

practice, it does not fully address the issue of predicting "unknown/unknowns" or address some of the root causes of NASA's project management challenges such as funding instability and underestimation of technical complexity.

We identified varied expectations and understandings among Agency stakeholders about the JCL process, ranging from those who see JCL as a multifunctional tool that can significantly improve cost and schedule management to others who view it as just another task projects must complete before moving into the development phase. We also identified issues with the quality of some JCL cost, schedule, and risk data inputs for several of the projects we reviewed. In-depth assessments of 9 of the 22 projects revealed 5 projects that had significant weaknesses in project scheduling, risk assessment, and cost estimating. Remedying these weaknesses would improve the overall accuracy of JCL analyses.

Moreover, the effectiveness and consistency of the process NASA uses to review projects' JCL analyses could be improved. For example, the extent and type of review varied widely from project to project. We attributed this inconsistency to a lack of formal guidance, inadequate training for review board members, and inconsistent expectations among the review board chairs regarding how projects should consider and incorporate the results of board reviews. We also found training for project personnel could be improved.

Finally, the confidence levels stipulated in the JCL policy may not be suitable for single-project programs, which cannot leverage funding from other projects in the same portfolio that finish under budget. Accordingly, holding those programs to the levels stipulated in the policy may not be appropriate.

To improve the Agency's JCL process, we made eight recommendations to NASA: (1) clarify that project managers and Decision Authorities are to use JCL results as the basis for proposing and establishing project budgets rather than as a validation tool; (2) assess the effectiveness of the scheduling function at NASA and develop a plan to ensure all NASA Centers have access to trained and qualified schedulers with experience commensurate with the complexity of assigned projects; (3) require use of historical data in JCL analyses; (4) establish formal guidance and clarify expectations for the review process; (5) establish a formal, JCL-specific training program for involved personnel; (6) work with JCL software providers to add a function that tracks and creates a report reflecting modifications to input data and require review boards to consider this information; (7) assess the appropriateness of the current confidence level requirement for single-project programs and consider clarifying or supplementing that requirement; and (8) require projects to include all identified, relevant, and discrete development risks with potential cost and/or schedule impacts in their JCL models.

NASA concurred with seven of our recommendations but did not concur with our recommendation to add a function to JCL software that would track and create a report reflecting modifications to input data. The Agency's proposal to work with JCL software vendors to implement other features and functions

that can aid with input data organization and verification is potentially responsive to our recommendation. Accordingly, we consider all recommendations resolved.

Audit of NASA's Joint Cost and Schedule Confidence Level Process (IG-15-024, September 29, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-024.pdf (report)

https://oig.nasa.gov/Video/RTolomeo_10092015.html (video)

AUDIT OF NASA'S COOPERATIVE AGREEMENT AWARDED TO THE CITY OF NEW ORLEANS

Federal law gives Government agencies the authority to enter into agreements to help protect agency property and employees from fire. Under this statute, NASA can enter into a reciprocal agreement with any fire organization in the vicinity of Agency property and may use a variety of instruments to obtain services. Prior to FY 2012, the Michoud Assembly Facility (Michoud), a NASA-owned manufacturing facility located in East New Orleans, Louisiana, received limited fire protection-related services through a protective services contract with a private company, as well as the New Orleans Fire Department, which includes Michoud in its response area. In September 2011, Agency procurement officials awarded a 1-year cooperative agreement to the City of New Orleans (the City), valued at $1,428,286, to provide fire protection services to Michoud. NASA subsequently modified the agreement, increasing its value to $2,156,409 and extending the period of performance through March 31, 2013. In April 2013, NASA and the City entered into an interagency agreement valued at $8.5 million for fire protection services through March 31, 2018.

In this audit, we found that NASA did not have an adequate system of controls in place to ensure proper administration of the cooperative agreement for fire protection services at Michoud. The City received approval from NASA to bill for services using the costs set forth in its proposed award budget, which were calculated using the highest rate of pay for positions at the Michoud Fire Station with an additional 15 percent indirect cost rate. An analysis comparing the actual payroll costs for the personnel who staffed the Fire Station with the quarterly invoiced amount determined that the Agency had overpaid the City by $185,621 for the period January 17, 2012, through April 16, 2012. Subsequent analysis found that NASA had overpaid the City by as much as $1.07 million over the six quarters invoiced under the cooperative agreement.

NASA also did not verify that the City performed required tests and inspections or consistently staffed the Michoud Fire Station with the number of personnel specified in the cooperative agreement. For example, the City was required to conduct annual safety inspections of Michoud buildings and report the results; however, the City did not provide the required information to Michoud officials. A review of the NASA award file for the agreement found no evidence that the Agency had verified that the City had performed these and other required services. Without establishing and implementing oversight procedures and adequately documenting the City's performance, NASA had little assurance that the objectives of the cooperative agreement were accomplished.

We made four recommendations to the Director of Marshall Space Flight Center, which has responsibility for Michoud, to (1) remedy $1.07 million in unsupported payroll costs; (2) review the amounts paid under the interagency agreement to ensure NASA has not overpaid for the services rendered and establish internal controls to ensure the City is not overpaid in the future; (3) ensure the City staffs the Michoud Fire Station with the personnel specified in the interagency agreement or have a remedy for periods in which this does not occur; and

(4) establish adequate controls to ensure the City performs required tests, inspections, and other agreed-upon services. NASA management concurred with our recommendations.

Audit of NASA's Cooperative Agreement Awarded to the City of New Orleans (IG-15-018, June 29, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-018.pdf

AUDIT OF NASA'S COOPERATIVE AGREEMENTS AWARDED TO WISE COUNTY CIRCUIT COURT

NASA awards approximately $846 million in grants and cooperative agreements annually and faces the ongoing challenge of ensuring these awards are administered appropriately and accomplish their stated goals and objectives. In 2008 and 2014, NASA awarded cooperative agreements worth a combined $8.08 million to the Wise County Clerk of Circuit Court (Wise County) in Wise, Virginia, in support of the Agency's DEVELOP National Program. DEVELOP is a capacity building program that seeks to address environmental management and public policy issues through interdisciplinary research projects that apply NASA Earth observations to community concerns around the globe. DEVELOP participants conduct applied science research projects under the guidance of science advisors from NASA and partner organizations. Projects funded through the Wise County agreements include a study of the weather in southwest Virginia, an aerosol climatology project, and using data obtained by NASA's Gravity Recovery and Climate Experiment Mission to help water managers in North Africa measure groundwater storage.

We performed an audit of NASA's awards to Wise County to determine whether the County used NASA funds for their intended purpose and whether costs claimed by the County were allowable, reasonable, and in accordance with applicable laws, regulations, guidelines, and the terms and conditions of the awards. Specifically, we reviewed the County's program performance and accomplishments, accounting and internal control environment, budget management and control, and reporting. We also reviewed NASA's administration of the agreements.

Although Wise County satisfied the overall performance goals and objectives of its cooperative agreements with NASA, we identified substantial deficiencies in the County's management of award funds that caused us to question the total amount of the awards. Specifically, for the 2008 cooperative agreement, Wise County improperly combined cooperative agreement revenues and expenditures with those relating to other County business in its accounting records. As a result, the County's accounting system could not identify transactions by award, impairing the audit trail required to ensure the County spent cooperative agreement funds appropriately. In addition, the County failed to disclose in required financial reports unexpended funds and improperly retained and used those funds to pay for activities carried out pursuant to subsequent agreements. Moreover, we identified $65,446 in unallocable, unallowable, or unsupported expenses, including tuition payments for courses not related to DEVELOP and extermination fees.

We also found $165,325 in award funds Wise County spent outside approved budget periods. Further, without prior NASA approval, Wise County reprogrammed $540,000 of the 2014 award budget for program support purposes, reducing the amount of funds available for actual research projects. Finally, we identified areas in which NASA could improve its policies and procedures for managing grant and cooperative agreement awards to ensure awards are competed and the proper award instrument is selected. For example, NASA awarded the 2008 and 2014 cooperative agreements to Wise County without soliciting the work to the public. We believe awarding grants

and cooperative agreements based on unsolicited proposals has hindered the Agency from maximizing the competitive process and made it difficult to ensure it is receiving the best value for the U.S. taxpayer.

To strengthen NASA's controls over the management of DEVELOP awards, we made seven recommendations to NASA, including ensuring Wise County strengthens internal controls over financial management to comply with NASA and Office of Management and Budget requirements; remedying unallocable, unallowable, or unsupported expenses and funds carried over from previous awards; and ensuring DEVELOP-related cooperative agreements are competitively awarded. Despite disagreeing with parts of our audit findings and methodology, the Agency concurred or partially concurred with our seven recommendations and proposed corrective actions that are generally responsive.

Audit of NASA's Cooperative Agreements Awarded to Wise County Circuit Court (IG-15-022, July 16, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-022.pdf

ONGOING AUDIT WORK

Audit of NASA's Engineering Services Contract at Kennedy Space Center

Kennedy Space Center has one of NASA's largest engineering services contracts at approximately $1.9 billion. The contract provides the Center with engineering and technology development, space flight systems engineering support, and laboratory services. We are examining whether NASA is appropriately managing the contract to accomplish mission goals in a timely and cost-effective manner.

Audit of NASA Training Grant Awarded to the University of Texas at Austin

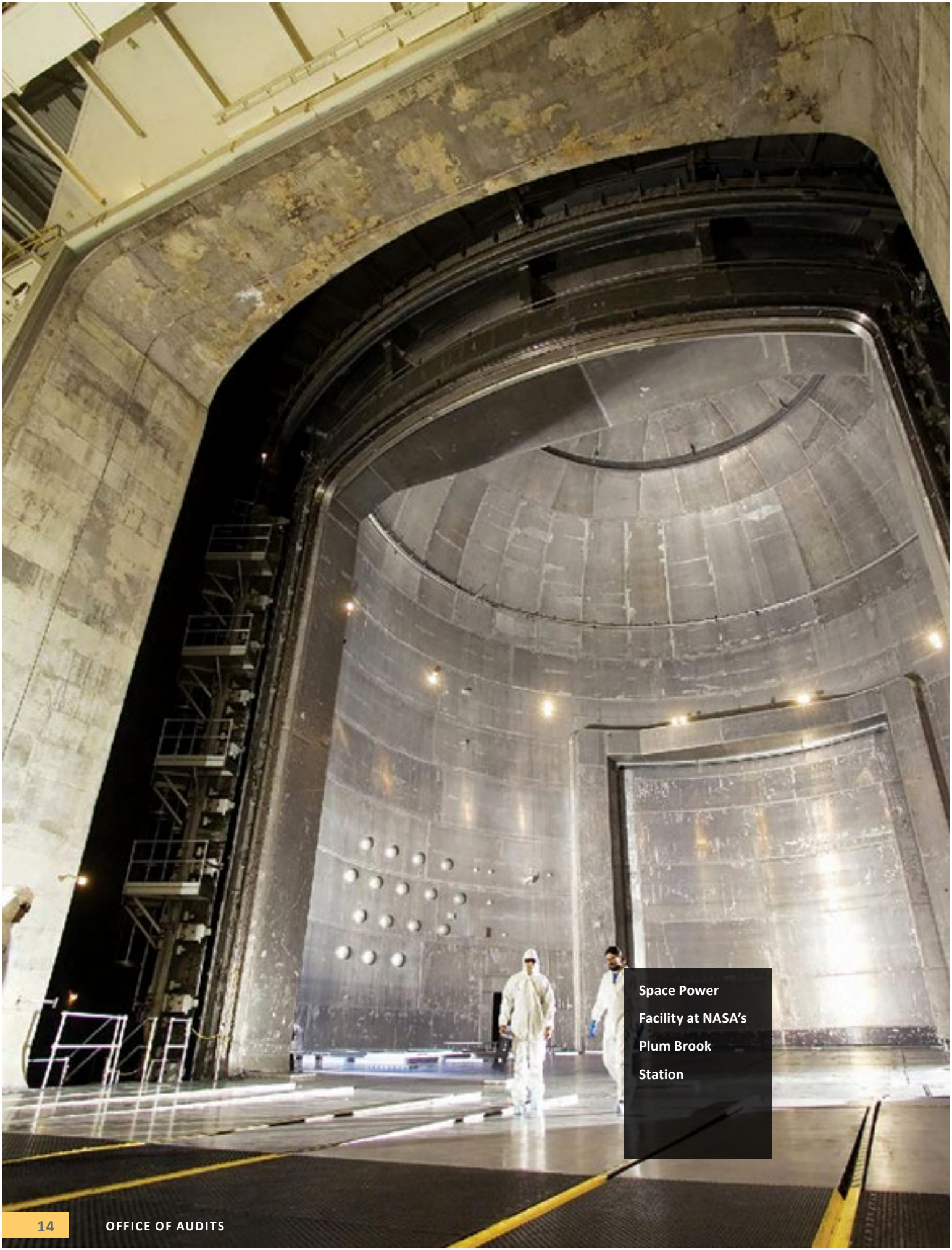
NASA awarded a $3.4 million education training grant in 2010 to the University of Texas at Austin with the goal of increasing higher education student interest in science, technology, engineering, and mathematics fields. We initiated this audit to determine whether the University used NASA's funds for their intended purpose and whether the costs associated with the award were allowable, reasonable, and in accordance with applicable laws, regulations, guidelines, and terms and conditions of the awards.

Audit of a NASA Research Grant Awarded to the University of Miami

The Marine Optical Buoy (MOBY) is an autonomous optical buoy moored off the island of Lanai in Hawaii. In August 2014, NASA awarded a 3-year research grant valued at approximately $2.5 million to the University of Miami to develop two copies of the prototype state-of-the-art ocean color satellite vicarious calibration system called MOBY-NET. We are evaluating whether research grant funds are being used for their intended purpose and whether costs claimed are allowable, reasonable, and in accordance with applicable laws, regulations, guidelines, and terms and conditions of the award.

Review of NASA's Management of the Earth Science Portfolio

With a FY 2015 budget of $1.8 billion, NASA's Earth Science Division manages 49 coordinated satellite and airborne missions in various stages of development and operations; more then 100 active technology investments; and several applied science programs for global observations of the land surface, biosphere, solid Earth, atmosphere, and oceans. We initiated this audit to assess NASA's management of its Earth science mission portfolio and determine whether it is effectively achieving established goals and priorities.



Space Power Facility at NASA's Plum Brook Station

INSTITUTIONAL AND FACILITY MANAGEMENT

NASA's real property includes more than 5,000 buildings and other structures, including wind tunnels, laboratories, launch pads, and test stands, that occupy 44 million square feet and are valued at more than $35 billion. However, over 80 percent of NASA's facilities are more than 40 years old and reaching the end of their design life spans. Managing its expansive portfolio is an ongoing challenge for the Agency and one the OIG will continue to monitor.

REVIEW OF NASA'S PRESSURE VESSELS AND PRESSURIZED SYSTEMS PROGRAM

To conduct its space and science operations, NASA uses a variety of storage tanks, cylinders, and piping that deliver compressed gas or liquid under significant pressure. Due to the types and operating parameters of these gasses and liquids, pressure vessels and pressurized systems (PVS) can be extremely hazardous and, if not properly operated and maintained, PVS failure could cause harm to people, facilities, and the surrounding environment. In fact, NASA has experienced PVS failures in the past that have resulted in loss of mission capability, injury, and property damage.

As of February 2015, NASA managed 10,109 active PVS and spent approximately $22 million annually to inspect and maintain these critical systems. Most PVS failures occur when a vessel or piping wall fails or ruptures because the internal pressure of the material inside exceeds the strength of the wall. Similar to the skin of a balloon that progressively grows thinner as inflated and weaker after multiple inflation deflation cycles, over-pressurization or repeated pressurization and depressurization can gradually weaken the skin or walls of PVS, eventually leading to failure. Internal or external corrosion and physical damage (scratches, dings, and dents) can also increase the risk of PVS failure.

We initiated this audit to assess NASA's management of its PVS. We sought to determine whether NASA had implemented appropriate policies and procedures to protect lives and facilities while assuring reliable operation of these systems.

NASA Centers could benefit from stronger oversight and clarification of policies and procedures to ensure reliable operation of their PVS, which in turn could reduce risk to personnel and facilities. Specifically, the decentralized nature of NASA's management and oversight of its PVS Program hinders its overall effectiveness. The Agency's policy and standards for the management, operation, inspection, and maintenance of PVS are intentionally written at a fairly high level and do not contain specific guidance regarding the application of national consensus codes and standards, and the level of experience, education, and training sufficient to qualify an individual to serve as a Center Pressure Systems Manager (PSM). In addition, NASA's Office of Safety and Mission Assurance did not provide adequate oversight of Center PVS Programs.

The team found multiple issues of concern at each of the three Centers visited – Glenn Research Center (Glenn), Langley Research Center (Langley), and Kennedy Space Center (Kennedy) – including unclear Center assignment

of PSM roles and responsibilities, corrosion on a large number of PVS, and inadequate inventory and property controls. For example, Kennedy's PSM believes he lacks authority and is inhibited in performing his duties. According to the PSM, Kennedy personnel and PVS contractors have not consistently informed him of design changes to safety-critical PVS and he was not afforded the opportunity to review design and procurement specifications for new PVS as required under Agency regulations. This unclear assignment of roles and responsibilities hinders the PSM's ability to perform the appropriate level of review and oversight.

We also found that although some Centers have Center-wide corrosion prevention programs, Glenn, Kennedy, and Langley had no formal plans to identify, monitor, and mitigate PVS corrosion and assess the risk of failure from internal corrosion or erosion. Without such a plan, PVS may be at risk of failure due to a weakening in the structural integrity of a vessel or piping wall. Throughout our field inspection, we identified numerous instances of corrosion that indicated a lack of due diligence, attention to detail, and oversight of PVS. Finally, we identified inadequate inventory and property controls for PVS at Kennedy.

In our judgment, the Centers' PVS Programs could be improved by establishing clear lines of communication for resolving issues, implementing corrosion prevention and mitigation programs, and evaluating and providing the PVS Programs sufficient resources to meet Center mission goals and objectives. To improve NASA's PVS Program and reduce the likelihood of mishaps, we made five recommendations to Agency management, including (1) reviewing PVS management at all NASA Centers, (2) revising applicable NASA guidance, (3) reassessing the effectiveness of Office of Safety and Mission Assurance oversight, (4) requiring Centers to perform an analysis to determine if having certain calibration and repair capabilities on site would be cost and mission effective, and (5) requiring each Center to implement a formal PVS corrosion prevention and mitigation program. We also made recommendations to the three Center Directors to improve the overall effectiveness of each Center's PVS Program. NASA concurred with each of the recommendations and proposed corrective actions.

Review of NASA's Pressure Vessels and Pressurized Systems Programs (IG-15-019, June 30, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-019.pdf

NASA'S REQUIREMENTS FOR PLUM BROOK STATION

Plum Brook Station, located in Sandusky, Ohio, 50 miles west of NASA's Glenn Research Center, is home to several unique space-related test facilities, including the Space Power Facility (SPF), an environmental simulation chamber used to test hardware in a simulated space or planetary environment. However, a majority of Plum Brook's test facilities are underutilized and the level of use and funding they receive depends on whether individual NASA programs or external customers choose to perform testing there rather than at other NASA or private facilities.

The NASA Authorization Act of 2010 directed the Agency to examine its real property assets and downsize to fit current and future missions and expected funding levels, paying particular attention to removing unneeded or duplicative infrastructure. In this audit, we assessed the cost of operating Plum Brook in light of its current and expected use.

Over the past 10 years, Plum Brook has eliminated approximately 1.3 million square feet of buildings and structures from its property. However, it continues to maintain several major testing facilities – most prominently the SPF and the

Spacecraft Propulsion Research Facility (known as the B-2), the world's largest thermal vacuum chamber that is also capable of testing rocket engines. Of these facilities, only the SPF has a full slate of testing planned over the next several years. In contrast, Plum Brook's Hypersonic Tunnel Facility and Cryogenic Components Laboratory have not been utilized for at least 4 years while a third facility – the Combined Effects Chamber designed for large-scale liquid hydrogen experiments – is unusable in its current condition. As of February 2015, NASA had not identified any customers for these three facilities. Moreover, although NASA's Solar Electric Propulsion Project plans to perform testing in the B-2 vacuum chamber in 2015, future utilization of the facility's rocket testing capabilities is uncertain. And while NASA officials told us the B-2 could be used to test the SLS upper stage rockets, such testing would require $15 million in basic refurbishment to the facility – costs the SLS Program or any other potential customer would be expected to cover in addition to potentially significant program-specific test costs necessary to meet customer requirements.

Plum Brook maintains a large amount of property to act as a buffer zone of open space to accommodate rocket testing at the B-2. If it becomes clear that such testing is not likely to resume, Plum Brook may be able to achieve cost savings by reducing the size of the buffer or at a minimum reducing the level of landscaping and road maintenance it performs in this area.

Finally, although Plum Brook and local officials have discussed several ideas to bring additional revenues to the site such as establishing a wind farm and leasing land for commercial research, funding for these efforts has not materialized and it appears unlikely these efforts will come to fruition.

Space Power Facility at Plum Brook Station

In order to assist NASA in ensuring effective and appropriate utilization of Plum Brook test facilities, we recommended the Assistant Administrator for Strategic Infrastructure and the Director of Plum Brook determine a long term strategy for Plum Brook and evaluate and pursue plans to excess or demolish any unneeded infrastructure. NASA concurred with our recommendations and described corrective actions.

Audit of NASA's Requirements for Plum Brook Station (IG-15-014, April 23, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-014.pdf (report)

https://oig.nasa.gov/Video/LNicolosi_05042015.html (video)

Orion recovery training at the Neutral Buoyancy Lab at Johnson Space Center

FINANCIAL MANAGEMENT

The OIG continues to assess NASA's efforts to improve the Agency's financial management practices and make recommendations to assist the Agency in addressing weaknesses.

NASA'S COMPLIANCE WITH THE IMPROPER PAYMENTS INFORMATION ACT FOR FISCAL YEAR 2014

The Improper Payments Information Act (IPIA) requires heads of Executive Branch agencies to annually review and identify programs and activities that may be susceptible to significant improper payments and, when cost-effective, conduct recapture audits for each program and activity with at least $1 million in annual disbursements. For each susceptible program and activity, agencies must estimate the annual amount of improper payments and report those estimates to Congress.

We reviewed whether NASA complied with the requirements of IPIA in FY 2014 and evaluated the completeness and accuracy of the Agency's IPIA reporting. We concluded that although NASA complied with IPIA, the Agency can improve its risk assessment process, payment recapture audits, and annual reporting. Specifically, NASA rated certain risk conditions the same for all programs when conducting the risk assessment for 2014, not fully considering what we believe are significant distinctions between programs that merit different ratings. Further, NASA considered only the risk factors listed in IPIA and guidance issued by the Office of Management and Budget (OMB), and not other relevant factors such as the substantial backlog of Defense Contract Audit Agency incurred cost audits of Agency contracts, which assess the costs contractors charge to the Government and are a key control for detecting improper payments. In addition, NASA used unclear scoring criteria and conducted incomplete research for one of the risk conditions. We also found NASA limited its annual payment recapture audits to fixed-price contracts, which, of the various procurement vehicles, have the lowest risk of improper payments. By failing to consider cost-type contracts, grants, and cooperative agreements, NASA increased the risk improper payments may go undetected. Further, NASA did not notify OMB of its decision to exclude grants and cooperative agreements or provide OMB with its supporting analysis. Finally, we found

Welding preparations for the Orion spacecraft at Michoud Assembly Facility

inaccuracies in NASA's FY 2014 Agency Financial Report (AFR), including errors in the tables concerning payment recapture audits, disposition of recaptured funds, and overpayments recaptured from other sources. As a result, NASA's AFR does not provide an accurate picture of NASA's payment recapture efforts.

To assist NASA in improving its risk assessment process and recapture audit program, we made six recommendations to the Chief Financial Officer, including that he modify NASA's risk assessment methodology, include cost-type contract payments in the Agency's recapture audit efforts, and develop a comprehensive justification explaining NASA's determination to exclude grants and cooperative agreements. We also made four recommendations to the Chief Financial Officer to improve the accuracy and completeness of NASA's reporting of its payment recapture efforts. NASA proposed corrective actions responsive to our recommendations.

NASA's Compliance with the Improper Payments Information Act for Fiscal Year 2014 (IG-15-015, May 15, 2015)

https://oig.nasa.gov/audits/reports/FY15/IG-15-015.pdf

ONGOING AUDIT WORK

Audit of NASA's Fiscal Year 2015 Financial Statements

The Chief Financial Officers Act of 1990, as modified by the Government Management Reform Act of 1994, requires an annual audit of NASA's consolidated financial statements. The OIG is overseeing the FY 2015 audit conducted by the independent public accounting firm CliftonLarsonAllen LLP.

OTHER AUDIT MATTERS

ONGOING AUDIT WORK

Review of NASA's Implementation of Export Control and Foreign National Access Program Recommendations

Since 2013, the OIG, the Government Accountability Office, and the National Academy of Public Administration have made recommendations to improve NASA's export control and foreign national access programs. We initiated this audit to assess whether NASA is effectively implementing the recommendations and taking prudent actions to protect export control-restricted information and appropriately manage foreign national access to its facilities and systems.

Audit of NASA's Education Program and Activities

NASA spends more than $100 million annually to support efforts to improve the quality and depth of teaching and education in science, technology, engineering, and mathematics (STEM). NASA's Office of Education coordinates with the Department of Education, the National Science Foundation, and the Smithsonian Institution on STEM issues to maximize NASA's unique educational and research resources. We are assessing NASA's implementation of its strategic education objective and STEM education programs.

Review of NASA-Funded Institutes

NASA provides funds to institutes to obtain research development and spur economic development, and the work of these institutes should align with Agency strategic goals and missions. We are identifying and examining the various institutes that receive funding from NASA to advance the Agency's mission and goals.

NASA's Compliance with the Federal Information Security Management Act for Fiscal Year 2015

In this required annual audit, we are evaluating NASA's IT security program against the 2015 Federal Information Security Management Act (FISMA) metrics. The OIG is reviewing a sample of NASA- and contractor-owned information systems to assess the effectiveness of the information security policies, procedures, standards, and guidelines. Additionally, we are determining whether major deficiencies identified in the 2014 FISMA review have been addressed.

Heat shield testing for future Mars exploration vehicles at Ames Research Center

STATISTICAL DATA

TABLE 1: AUDIT PRODUCTS AND IMPACTS

Report No. and Date Issued	Title	Impact
Space Operations and Human Exploration		
IG-15-023, 9/17/2015	NASA's Response to Orbital's October 2014 Launch Failure: Impacts on Commercial Resupply of the International Space Station	Identified schedule, performance, and financial risks in NASA's commercial resupply efforts for the ISS and made recommendations to mitigate those risks, ensure protection of the United States against claims for damage caused by commercial space flight operations, and address independence concerns for accident investigation boards.
IG-15-021, 7/15/2015	Audit of NASA's Management of International Space Station Operations and Maintenance Contracts	Identified issues NASA should address to improve effectiveness for determining award fee evaluations.
Acquisition and Project Management		
IG-15-024, 9/29/2015	Audit of NASA's Joint Cost and Schedule Confidence Level Process	Provided specific areas of focus and recommendations that could help improve NASA's JCL process.
IG-15-022, 7/16/2015	Audit of NASA's Cooperative Agreement Awarded to the Wise County Circuit Court	Identified internal control deficiencies and questioned costs that NASA must work with the recipient to remedy in order to safeguard the use of taxpayer funding.
IG-15-018, 6/29/2015	Audit of NASA's Cooperative Agreement Awarded to the City of New Orleans	Identified issues that NASA must address to properly manage awards for fire protection services at Michoud.
Institutional and Facility Management		
IG-15-019, 6/30/2015	Review of NASA's Pressure Vessels and Pressurized Systems Program	Identified issues needing to be addressed to improve effectiveness and reduce risk in NASA's PVS Program.
IG-15-014, 4/23/2015	NASA's Requirements for Plum Brook Station	Identified issues that NASA must address to manage the Agency's underutilized infrastructure and facilities.
Financial Management		
IG-15-015, 5/15/2015	NASA's Compliance with the Improper Payments Information Act for Fiscal Year 2014	Provided specific areas of focus to ensure the Agency complies with the Improper Payments Information Act of 2002, as amended.

TABLE 2: AUDIT RECOMMENDATIONS YET TO BE IMPLEMENTED, CURRENT SEMIANNUAL REPORT

Report No. and Date Issued	Report Title	Date Resolved	Number of Recommendations		Latest Target Closure Date
			Open	Closed	
Space Operations and Human Exploration					
IG-15-023, 9/17/2015	NASA's Response to Orbital's October 2014 Launch Failure: Impacts on Commercial Resupply of the International Space Station	–	7	0	5/1/2016
IG-15-021, 7/15/2015	Audit of NASA's Management of International Space Station Operations and Maintenance Contracts	–	1	1	10/9/2015
Acquisition and Project Management					
IG-15-024, 9/29/2015	Audit of NASA's Joint Cost and Schedule Confidence Level Process	9/29/2015	8	0	12/30/2016
IG-15-022, 7/16/2015	Audit of NASA's Cooperative Agreement Awarded to the Wise County Circuit Court	7/16/2015	7	0	–
IG-15-018, 6/29/2015	Audit of NASA's Cooperative Agreement Awarded to the City of New Orleans	6/29/2015	4	0	11/30/2015
Institutional and Facility Management					
IG-15-019, 6/30/2015	Review of NASA's Pressure Vessel Systems	6/30/2015	10	0	10/31/2016
IG-15-014, 4/23/2015	NASA's Requirements for Plum Brook Station	4/23/2015	2	0	12/31/2016
Financial Management					
IG-15-015, 5/15/2015	NASA's Compliance with the Improper Payments Information Act for Fiscal Year 2014	5/15/2015	10	0	5/31/2016

TABLE 3: AUDIT RECOMMENDATIONS YET TO BE IMPLEMENTED, PREVIOUS SEMIANNUAL REPORTS

Report No. and Date Issued	Report Title	Date Resolved	Number of Recommendations		Latest Target Closure Date
			Open	Closed	
Acquisition and Project Management					
IG-15-010, 12/17/2014	Costs Incurred on NASA's Cost-Type Contracts	12/17/2014	1	4	12/17/2015
IG-15-009, 12/16/2014	NASA's Use of Blanket Purchase Agreements	12/16/2014	4	4	10/30/2015
IG-14-020, 6/5/2014	NASA's Use of Space Act Agreements	6/5/2014	4	3	9/30/2015

Report No. and Date Issued	Report Title	Date Resolved	Number of Recommendations		Latest Target Closure Date
			Open	Closed	
IG-14-010, 1/15/2014	NASA's Strategic Sourcing Program	7/15/2014	1	5	–
IG-14-003, 11/19/2013	NASA's Use of Award-fee Contracts	4/30/2015	7	8	4/30/2016
IG-12-018, 7/26/2012	Audit of NASA Grants Awarded to the Philadelphia College Opportunity Resources for Education	7/26/2012	3	5	12/30/2015
Space Operations and Human Exploration					
IG-15-013, 3/26/2015	NASA's Management of the Deep Space Network	3/26/2015	9	3	7/31/2016
IG-15-003, 10/23/2014	NASA's Launch Support and Infrastructure Modernization: Commercial Space Launch Activities at Kennedy Space Center	10/23/2015	2	1	11/30/2016
IG-14-026, 7/22/2014	Audit of the Space Network's Physical and Information Technology Security Risks	7/22/2014	4	0	1/17/2018
IG-14-009, 1/8/2014	Core Stage Testing of NASA's Space Launch System	1/8/2014	3	1	1/31/2016
IG-14-001, 11/13/2013	NASA's Management of its Commercial Crew Program	11/13/2013	1	3	6/30/2015
Information Technology Security and Governance					
IG-14-015, 2/27/2014	NASA's Management of Its Smartphones, Tablets, and Other Mobile Devices	2/27/2014	2	0	6/30/2016
IG-13-015, 6/5/2013	Audit of NASA's Information Technology Governance	6/5/2013	7	1	1/13/2016
IG-13-006, 3/18/2013	NASA's Process for Acquiring Information Technology Security Assessment and Monitoring Tools	3/18/2013	2	2	9/30/2015
IG-12-017, 8/7/2012	Review of NASA's Computer Security Incident Detection and Handling Capability	8/7/2012	2	1	9/30/2016

Report No. and Date Issued	Report Title	Date Resolved	Number of Recommendations		Latest Target Closure Date
			Open	Closed	
Institutional and Facility Management					
IG-13-008, 2/12/2013	NASA's Efforts to Reduce Unneeded Infrastructure and Facilities	2/12/2013	2	3	2/1/2016
Financial Management					
IG-15-008, 11/24/2014	FY 2014 Financial Statement Audit Management Letter	5/18/2015	85	0	12/31/2015
IG-15-002, 10/21/2014	Audit of NASA's Premium Air Travel	10/21/2014	1	6	12/31/2015

TABLE 4: AUDITS WITH QUESTIONED COSTS

	Number of Audit Reports	Total Questioned Costs[a]
No management decision made by beginning of period	0	$0
Issued during period	3	$5,562,827
Needing management decision during period	3	$5,562,827
Management Decision Made During Period[b]		
Amounts agreed to by management	0	$0
Amounts not agreed to by management	1	$589,767
No Management Decision at End of Period[b]		
Less than 6 months old	2	$4,973,060
More than 6 months old	0	$0

[a] "Questioned Costs" (the Inspector General Act of 1978 definition) is a cost that is questioned by the OIG because of (1) alleged violation of a provision of a law, regulation, contract, grant, cooperative agreement, or other agreement or document governing the expenditure of funds; (2) a finding that, at the time of the audit, such cost is not supported by adequate documentation; or (3) a finding that the expenditure of funds for the intended purpose is unnecessary or unreasonable.

[b] "Management Decision" (the Inspector General Act of 1978 definition) is the evaluation by management of the findings and recommendations included in an audit report and the issuance of a final decision by management concerning its response to such findings and recommendations, including actions that management concludes are necessary.

TABLE 5: AUDITS WITH RECOMMENDATIONS THAT FUNDS BE PUT TO BETTER USE

	Number of Audit Reports	Total Questioned Costs
No management decision made by beginning of period	1	$9,653,020
Issued during period	2	$93,400,000
Needing management decision during period	3	$103,053,020
Management Decision Made During Period		
Amounts agreed to by management	0	$0
Amounts not agreed to by management	1	$89,000,000
No Management Decision at End of Period		
Less than 6 months old	1	$4,400,000
More than 6 months old	1	$9,653,020

Note: A recommendation by the OIG that funds could be more efficiently used if management took actions to implement and complete the recommendation, including (1) reductions in outlays; (2) deobligation of funds from programs or operations; (3) withdrawal of interest subsidy costs on loans or loan guarantees, insurance, or bonds; (4) costs not incurred by implementing recommended improvements related to the operations of the establishment, a contractor, or grantee; (5) avoidance of unnecessary expenditures noted in pre-award reviews of contract or grant agreements; or (6) any other savings that are specifically identified. (Dollar amounts identified in this category may not always allow for direct budgetary actions but generally allow the Agency to use the amounts more effectively in the accomplishment of program objectives.)

TABLE 6: STATUS OF SINGLE AUDIT FINDINGS AND QUESTIONED COSTS RELATED TO NASA AWARDS

Audits reviewed	34
Audits with findings	11

Findings and Questioned Costs		
	Number of Findings	**Questioned Costs**
Management decisions pending, beginning of reporting period	50	$1,126,735
Findings added during the reporting period	19	$11,307
Management decision made during reporting period	(20)	
Agreed to by management		($401,745)
Not agreed to by management		
Management decisions pending, end of reporting period	49	$736,297

Note: The Single Audit Act, as amended, requires Federal award recipients to obtain audits of their Federal awards.

DEFENSE CONTRACT AUDIT AGENCY AUDITS OF NASA CONTRACTORS

The Defense Contract Audit Agency (DCAA) provides audit services to NASA on a reimbursable basis. DCAA provided the following information during this period on reports involving NASA contract activities.

DCAA AUDIT REPORTS ISSUED

During this period, DCAA issued 118 audit reports on contractors who do business with NASA. Corrective actions taken in response to DCAA audit report recommendations usually result from negotiations between the contractors doing business with NASA and the Government contracting officer with cognizant responsibility (e.g., the Defense Contract Management Agency and NASA). The cognizant agency responsible for administering the contract negotiates recoveries with the contractor after deciding whether to accept or reject the questioned costs and recommendations for funds to be put to better use. The following table shows the amounts of questioned costs and funds to be put to better use included in DCAA reports issued during this semiannual reporting period and the amounts that were agreed to during the reporting period.

TABLE 7: DCAA AUDIT REPORTS WITH QUESTIONED COSTS AND RECOMMENDATIONS THAT FUNDS BE PUT TO BETTER USE

	Amounts in Issued Reports	Amounts Agreed To[a]
Questioned costs	$32,311,000	$7,221,000
Funds to be put to better use	$0	$3,889,000

Note: This data is provided to the NASA OIG by DCAA and may include forward pricing proposals, operations, incurred costs, cost accounting standards, and defective pricing audits. Because of limited time between availability of management information system data and legislative reporting requirements, there is minimal opportunity for DCAA to verify the accuracy of reported data. Accordingly, submitted data is subject to change based on subsequent DCAA authentication. The data presented does not include statistics on audits that resulted in contracts not awarded or in which the contractor was not successful.

[a] Amounts agreed to include amounts from reports issued in previous semiannual reporting periods.


OR GENERAL
NASA
ADMINISTRATION

OFFICE OF INVESTIGATIONS

Scott Kelly, ISS flight engineer

The Office of Investigations investigates criminal activity, fraud, and misconduct involving NASA programs, personnel, and operations.

PROCUREMENT, ACQUISITION, AND GRANT FRAUD

Scientists Sentenced and Ordered to Forfeit $10 Million

A husband and wife team of scientists was convicted of fraudulently obtaining more than $10 million in Small Business Innovation Research (SBIR) contracts from NASA and other Federal agencies. The couple submitted research proposals using stolen identities in order to create false endorsements for their proposed contracts and lied about facilities, costs, the principal investigator on some of the contracts, and certifications included in the proposals. Following conviction, the judge sentenced the husband and wife to serve 15 and 13 years of incarceration, respectively, and pay $10.7 million in restitution.

Research Firm and Former University of Houston Professors Pled Guilty

A Houston research firm and two former University of Houston professors pled guilty to fraudulent activity related to more than $7 million in SBIR contracts with NASA and other Federal agencies. An investigation conducted by the OIG, the Defense Criminal Investigative Service, the National Science Foundation OIG, the Department of Energy OIG, the U.S. Air Force Office of Special Investigations, and the DCAA revealed the firm, as well as the two professors, made false statements in the application and proposal processes and in filing electronic claims for payment after they were awarded grants or contracts. The firm pled guilty to one count of conspiracy to submit false statements. The two former professors pled guilty to misdemeanor charges and agreed to pay restitution totaling $235,000.

Wheeling Jesuit University Agrees to Civil Settlement

Wheeling Jesuit University agreed to pay a $2.3 million civil settlement to resolve allegations the University misused grant funding received from NASA and other Government agencies. An investigation conducted by the OIG, the Department of Labor OIG, and the National Science Foundation OIG disclosed that the University failed to comply with rules and regulations governing the allocation of costs and expenses associated with several grants between 2003 and 2010.

Federal Jury Convicts Owner and Business of Fraud

A business owner and his company were convicted of seven counts of wire fraud. A joint investigation conducted by the OIG, the National Science Foundation OIG, and the U.S. Secret Service revealed the owner received almost $800,000 in grant funds. The owner spent the funds almost entirely on personal expenses, such as mortgage payments, private school tuition for his children, vacations, shopping, and wire transfers to family and friends overseas.

Civil Complaint Filed Against NASA Contractors

The U.S. Attorney in the Middle District of Florida filed a civil complaint alleging two Kennedy Space Center contractors falsely billed NASA and the General Services Administration (GSA) approximately $387,000 for unnecessary tire replacements over a 6-year period. As an example, the contractor ordered six tire replacements for the same vehicle during a 27-month period. Some of the tires that were replaced had been used for less than 5,000 miles. This investigation is being conducted by the OIG and the GSA OIG.

Company President Settles Civil Claims

The former president of a security firm that contracted with NASA agreed to resolve civil claims for himself and his company by agreeing to pay $58,588 and $250,000, respectively. The president had previously pled guilty to one count of major fraud related to the fraudulent creation of a small business to obtain Small Business Administration set-aside contracts.

THEFT AND EMBEZZLEMENT

Former Contractor Employee Sentenced for Embezzlement

A former contractor employee was sentenced to 2 days in jail, 3 months' probation, 45 days of community service, and ordered to pay $20,353 in restitution for grand theft by embezzlement. An investigation conducted by the OIG, the U.S. Air Force Office of Special Investigations, and the National Reconnaissance Office OIG revealed the employee falsified payroll records and test data for electrical components associated with the James Webb Space Telescope and other Government programs.

EMPLOYEE MISCONDUCT

Retired Marshall Space Flight Center Engineer Sentenced

A retired Marshall Space Flight Center engineer was sentenced to 12 months' probation and ordered to pay $15,088 in restitution after pleading guilty to one count of making a false statement. The OIG's investigation determined the employee submitted $15,088 in false travel claims to NASA over the course of several years.

Former Johnson Space Center Contractor Employee Sentenced

A former NASA contract employee received a deferred adjudication, was sentenced to 5 years' probation, and was ordered to pay $4,797 in restitution. The OIG's investigation revealed the employee stole copper and aluminum from worksites at Johnson Space Center.

Former NASA Engineer Pled Guilty for Making False Statements

A former NASA engineer pled guilty to one count of making false statements. The employee provided false information regarding previous arrests and criminal charges while applying for a security clearance.

Violation of Travel Card Policy by Senior NASA Manager

A NASA OIG investigation revealed a senior NASA manager purchased personal items with his Government travel card and obtained cash advances during periods when he was not in an official travel status, in contravention of Agency policy. However, the manager paid for the personal items with his own funds, and NASA did not incur any loss due to the policy violations. The OIG referred the matter to NASA management, who said they planned to counsel the employee.

Senior Executive Counseled

An OIG investigation revealed a senior executive violated Agency policy by sharing login credentials with an administrative assistant so the assistant could approve a position description. The OIG referred the policy violation to NASA management, who counseled the employee.

CYBER CRIME

Estonian Nationals Sentenced for Role in Cyber Crime Scheme

Three Estonian nationals were sentenced to 40 months in prison and ordered to forfeit between $1 million and $2.5 million each in ill-gotten gains for their role in a fraud scheme that caused malware to infect NASA computer systems and millions of additional systems worldwide. A fourth Estonian national, who served as leader of the cyber crime ring, pled guilty to conspiracy to commit wire fraud and computer intrusion. He will be sentenced in October 2015. This case was investigated by the OIG and the Federal Bureau of Investigation.

French Citizen Sentenced for Website Intrusions

A French citizen was arrested and prosecuted for compromising numerous government and private websites worldwide, including a website maintained by NASA's Glenn Research Center. In April, a French court sentenced the individual to 6 months in prison. This investigation was conducted by the OIG, the U.S. Army Criminal Investigation Command, the U.S. Air Force Office of Special Investigations, the Department of Energy OIG, the German Bundeskriminalamt, and the French Ministry of the Interior's Cybercrime Unit.

Nigerian Hacker Convicted and Sentenced

A Nigerian hacker was convicted in his home country of two counts of possessing a document obtained under false pretenses and sentenced to 2 years in prison on each count. The OIG's investigation revealed numerous Agency e-mail accounts were accessed and used by hackers in Nigeria to perpetrate an advance-fee fraud scheme. The subject was arrested by Nigeria's Economic and Financial Crimes Commission based upon a petition received from the OIG.

Former Contractor Employee Arrested

A former contractor employee at the Jet Propulsion Laboratory was arrested for possession of child pornography. The OIG's investigation revealed the employee allegedly utilized NASA network resources to download child pornography.

Former NASA Contractor Employee Convicted

A former NASA contractor employee at Kennedy Space Center pled guilty to one count of possession of child pornography. In May 2015, the individual was fired for policy violations. During out-processing, officials discovered the individual possessed multiple Agency-owned electronic media storage devices. A search of the devices discovered child pornography. In addition to downloading pornography, the former employee admitted he secretly filmed young children at his home.

Contractor Employee Indicted for Child Pornography

A contractor employee at Kennedy Space Center was indicted on child pornography charges. The OIG's investigation revealed the employee allegedly used NASA network resources to download child pornography.

NASA Intern Sentenced for Child Pornography

A former intern at the Ames Research Center was sentenced to 4 months in prison and 3 years' probation for obscenity charges related to child pornography. The OIG's investigation revealed the intern used NASA network resources to download child pornography.

OTHER CRIMINAL ACTIVITY

Florida Man Sentenced for Possessing Fraudulent NASA Identification

A Florida man was sentenced to 1 year in prison and 3 years' supervised release and ordered to pay $114,000 in restitution after pleading guilty to making false statements regarding healthcare claims and improperly possessing official badges, identification cards, and other insignia depicting NASA and other Federal agencies.

Former Contractor Employee Indicted on Obscenity Charges

A former contractor employee at Glenn Research Center was indicted on obscenity, harassment, and public indecency charges. An investigation conducted by the OIG and the Federal Protective Service disclosed the contractor allegedly sent explicit photographs of himself via his personal e-mail account to female employees working in the Cleveland Federal Building. The investigation revealed some of the photographs were likely taken in NASA workspace.

Composite Cryotank Technologies and Demonstration at Marshall Space Flight Center

Parachute testing for NASA's InSight mission at Ames Research Center

STATISTICAL DATA

TABLE 8: OFFICE OF INVESTIGATIONS COMPLAINT INTAKE DISPOSITION

Source of Complaint	Zero Files[a]	Administrative Investigations[b]	Management Referrals[c]	Preliminary Investigations[d]	Total
Hotline	44	11	4	16	75
All Others	32	24	1	66	123
Total	**76**	**35**	**5**	**82**	**198**

[a] Zero files are complaints for which no action is required or that are referred to NASA management for information only or to another agency.

[b] Administrative investigations include noncriminal matters initiated by the NASA OIG Office of Investigations as well as hotline complaints referred to the OIG Office of Audits.

[c] Management referrals are complaints referred to NASA management for which a response is requested.

[d] Preliminary investigations are complaints where additional information must be obtained prior to initiating a full criminal or civil investigation.

TABLE 9: FULL INVESTIGATIONS OPENED THIS REPORTING PERIOD

Full Criminal/Civil Investigations[a]	40

[a] Full investigations evolve from preliminary investigations that result in a reasonable belief that a violation of law has taken place.

TABLE 10: CASES PENDING AT END OF REPORTING PERIOD

Preliminary Investigations	52
Full Criminal/Civil Investigations	145
Administrative Investigations	63
Total	**260**

TABLE 11: QUI TAM INVESTIGATIONS

Qui Tam Matters Opened This Reporting Period	2
Qui Tam Matters Pending at End of Reporting Period	4

Note: The number of qui tam investigations is a subset of the total number of investigations opened and pending.

TABLE 12: JUDICIAL ACTIONS

Cases Referred for Prosecution	40
Indictments/Criminal Informations	15
Convictions/Plea Bargains	15
Sentencing/Pre-Trial Diversions	19
Civil Settlements/Judgments	3

TABLE 13: ADMINISTRATIVE ACTIONS

Referrals to NASA management for review and response	10
Referrals to NASA management – information only	18
Referrals to the Office of Audits	8
Referrals to Security or other agencies	9
Recommendation to NASA management for disciplinary action	
Involving a NASA employee	6
Involving a contractor firm	1
Involving a contractor employee	5
Other	0
Total	**12**
Administrative/disciplinary actions taken	
Against a NASA employee	5
Against a contractor employee	4
Procedural change implemented	7
Total	**16**
Recommendations to NASA management on program improvements	
Matters of procedure	6
Total	**6**
Suspensions or debarments from Government contracting	
Involving an individual	13
Involving a contractor firm	8
Total	**21**

TABLE 14: INVESTIGATIVE RECEIVABLES AND RECOVERIES

Judicial	$28,734,775
Administrative[a]	$2,340,592
Total	**$31,075,367**
Total NASA	**$5,302,016**

[a] Includes amounts for cost savings to NASA as a result of investigations.


OR GENERAL
NASA
ADMINISTRATION

CONGRESSIONAL TESTIMONY

Blue moon over
Washington, D.C.

THE INTERNATIONAL SPACE STATION: ADDRESSING OPERATIONAL CHALLENGES

On July 10, Inspector General (IG) Martin testified before the U.S. House of Representatives Subcommittee on Space, Committee on Science, Space, and Technology, regarding NASA's challenges in operating and maximizing research on the ISS in light of the loss of three cargo resupply flights over the previous 8 months.

In his testimony, IG Martin highlighted prior related work by the OIG, including reviews that examined NASA's plans to extend Station operations until 2024 and its contracts with private companies to fly cargo and eventually crew to the Station.

"Our audit last September of NASA's plans to extend the ISS reported that the Agency has identified no major obstacles to continued operation through 2024. However, we found NASA must address a series of technical challenges, including ensuring adequate power generation in light of degradation of the Station's solar arrays as well as a limited ability to transport large replacement parts," said IG Martin.

"While NASA officials estimate an annual ISS budget of between $3 and $4 billion through 2024, we suspect the cost may be higher. First, much of the projected cost increase is attributable to higher transportation costs, and we found NASA's estimates for cargo and crew transportation optimistic. Second, the Agency's international partners have yet to commit to participating in Station operations beyond 2020, and a decision by one or more not to participate could drive up costs for NASA," IG Martin explained.

"As noted in our report, the number one operational risk for the ISS Program is ensuring the ability to deliver supplies and astronauts to Station. While NASA is working with two commercial cargo providers to ensure redundancy, flights by Orbital and SpaceX are now on hold pending the outcome of accident investigations and approval from the [Federal Aviation Administration] and NASA."

In addition to the loss of important supplies, IG Martin said the recent Orbital and SpaceX launch failures have affected research in three ways: (1) reduced available crew time due to a temporary delay in returning the Station's crew complement to six, (2) added cost to regenerate some of the research lost, and (3) delayed the return of experiments due to suspension of SpaceX flights, which are the only vehicles capable of returning experiments and other cargo to Earth.

Moreover, NASA's Commercial Crew Program faces several significant challenges, including unstable funding, the need to provide timely requirement and certification guidance to contractors, and coordination issues with other Federal agencies, IG Martin added. "Given the importance of the subject, the OIG recently initiated a follow-up audit to review the status of the Agency's Commercial Crew Program."

The International Space Station: Addressing Operational Challenges (July 10, 2015)

https://oig.nasa.gov/congressional/IGTestimony07102015.pdf (testimony)

https://oig.nasa.gov/Video/PMartin_07102015.html (video)

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION'S FISCAL YEAR 2016 BUDGET: TOP MANAGEMENT AND PERFORMANCE CHALLENGES

In April 2015, IG Martin submitted written testimony to the Senate Subcommittee on Commerce, Justice and Science, and Related Agencies, Committee on Appropriations, discussing the top management and performance challenges facing NASA.

"Over the past few months, NASA has advanced its space exploration and science missions with a successful December test flight of Orion and the January launch of the Soil Moisture Active-Passive mission. Unfortunately, the Agency also experienced some disappointments, most prominently the October 2014 failure of an Orbital resupply mission to the ISS that destroyed the company's rocket, capsule, and all NASA cargo aboard and caused at least $15 million of damage at the Wallops Flight Facility," IG Martin wrote.

The IG reiterated that prior to the failure, Orbital had five cargo resupply flights scheduled: two in 2015 and three in 2016. After the mishap, the company proposed to fulfill its remaining contractual obligations to NASA in four resupply flights rather than five – a proposal to which NASA agreed.

In his statement, IG Martin noted that "moving forward, NASA's ability to sustain its ambitious exploration and science programs will be driven in large measure by whether it can adequately fund and manage such high-profile initiatives as the SLS rocket, Orion capsule, and related launch infrastructure at Kennedy Space Center; James Webb Space Telescope; Mars 2020 Rover; and its commercial cargo and crew program."

The written submission also highlighted securing commercial crew transportation services; developing the SLS, Orion, and Ground Systems Development and Operations; and ensuring continued efficacy of the space communications networks as other significant management and performance challenges facing NASA.

The National Aeronautics and Space Administration's Fiscal Year 2016 Budget: Top Management and Performance Challenges (April 16, 2015)

https://oig.nasa.gov/congressional/IGTestimony04162015.pdf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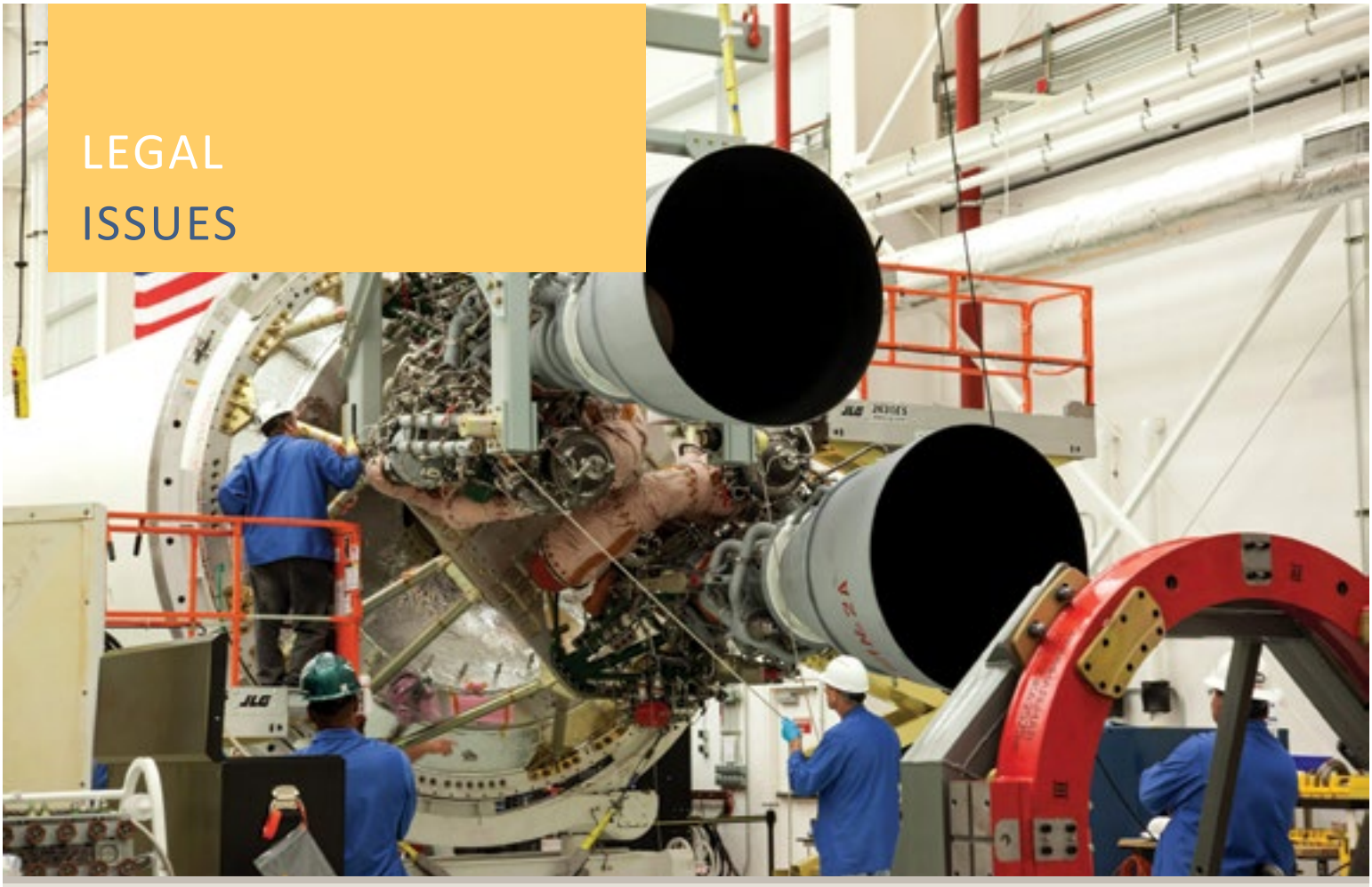
LEGAL ISSUES



RD-181 engines being integrated with the Antares first-stage airframe at the Wallops Island Horizontal Integration Facility

IN-SERVICE LEGAL TRAINING

During this semiannual period, the OIG's Office of Counsel conducted training for OIG criminal investigators. The training consisted of discussion of policy changes on conducting interviews, updates to the OI Manual, and preservation of evidence. In addition, refresher training on grand jury secrecy, warnings, and advice of rights was presented. Legal updates in the areas of search and seizure and lawful use of force were also provided.

REGULATORY REVIEW

During this reporting period, the OIG reviewed and commented on 19 NASA directives and regulations. Significant directives and regulations reviewed included the following:

NPR 9250.1C, Property, Plant, and Equipment and Operating Materials and Supplies

This NASA Procedural Requirements provides the financial management requirements for the identification, valuation, recognition, and reporting of capitalized Property, Plant, and Equipment (PP&E) and Operating Materials and Supplies. It was revised to update financial management requirements for determining whether new PP&E acquisitions, fabrications, and modifications should be capitalized. The changes included increasing the capitalization threshold for personal and real property to $500,000. We commented that the policies set forth are conveyed with sufficient clarity and are consistent with relevant external requirements.

14 C.F.R. §1204.1100 et seq., Enforcing Traffic Laws at NASA Centers and Component Facilities

We reviewed proposed changes to the regulation, which establishes traffic enforcement regulations, authorities, and related procedures at all NASA Centers and component facilities. The proposed changes were intended to correct citations and to clarify the regulation's scope, policy, responsibilities, procedures, and violation descriptions. We concurred in the changes to the regulation but sought additional information from the Agency regarding the anticipated logistics of implementing the regulation at the various NASA Centers in order to ensure that the implementation takes place in a manner consistent with applicable legal authorities.

STATISTICAL DATA

TABLE 15: LEGAL ACTIVITIES AND REVIEWS

FOIA Matters	46
Appeals	0
Inspector General Subpoenas Issued	42
Regulations Reviewed	19

APPENDIXES

Appendixes

Galaxy Messier 63, Sunflower Galaxy (taken by the Hubble Space Telescope)

APPENDIX A. INSPECTOR GENERAL ACT REPORTING REQUIREMENTS

Inspector General Act Citation	Requirement Definition	Cross-Reference Page Numbers
Section 4(a)(2)	Review of Legislation and Regulations	45
Section 5(a)(1)	Significant Problems, Abuses, and Deficiencies	3-21
Section 5(a)(2)	Recommendations for Corrective Actions	3-20
Section 5(a)(3)	Prior Significant Audit Recommendations Yet to Be Implemented	24-26
Section 5(a)(4)	Matters Referred to Prosecutive Authorities	38
Sections 5(a)(5) and 6(b)(2)	Summary of Refusals to Provide Information	N/A
Section 5(a)(6)	OIG Audit Products Issued – Includes Total Dollar Values of Questioned Costs, Unsupported Costs, and Recommendations that Funds Be Put to Better Use	26-27
Section 5(a)(7)	Summary of Significant Audits and Investigations	2-34
Section 5(a)(8)	Total Number of Reports and Total Dollar Value for Audits with Questioned Costs	26
Section 5(a)(9)	Total Number of Reports and Total Dollar Value for Audits with Recommendations that Funds Be Put to Better Use	27
Section 5(a)(10)	Summary of Prior Audit Products for which No Management Decision Has Been Made	26-27
Section 5(a)(11)	Description and Explanation of Significant Revised Management Decisions	N/A
Section 5(a)(12)	Significant Management Decisions with which the Inspector General Disagreed	N/A
Section 5(a)(13)	Reporting in Accordance with Section 5(b) of the Federal Financial Management Improvement Act of 1996 Remediation Plan	N/A
Section 5(a)(14)	Peer Review Conducted by Another OIG	50
Section 5(a)(15)	Outstanding Recommendations from Peer Reviews of the NASA OIG	N/A
Section 5(a)(16)	Outstanding Recommendations from Peer Reviews Conducted by the NASA OIG	N/A

APPENDIX B. PEER REVIEWS

The Dodd-Frank Wall Street Reform and Consumer Protection Act requires the OIG to include in its semiannual reports any peer review results provided or received during the relevant reporting period. Peer reviews are required every 3 years. In compliance with the Act, we provide the following information.

OFFICE OF AUDITS

During this reporting period, the Department of State (State) OIG completed its peer review of the NASA OIG Office of Audits' quality control system in place between April 1, 2012, and March 31, 2015. The State OIG review concluded that our quality control system was suitably designed and provided us with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Federal audit organizations can receive a rating of pass, pass with deficiencies, or fail. State OIG assigned the Office of Audits a peer review rating of "pass" for the period reviewed, the highest rating available. We have implemented all of State OIG's recommendations for process and policy improvements, and there are no outstanding recommendations from this or any previous peer reviews of the Office of Audits.

OFFICE OF INVESTIGATIONS

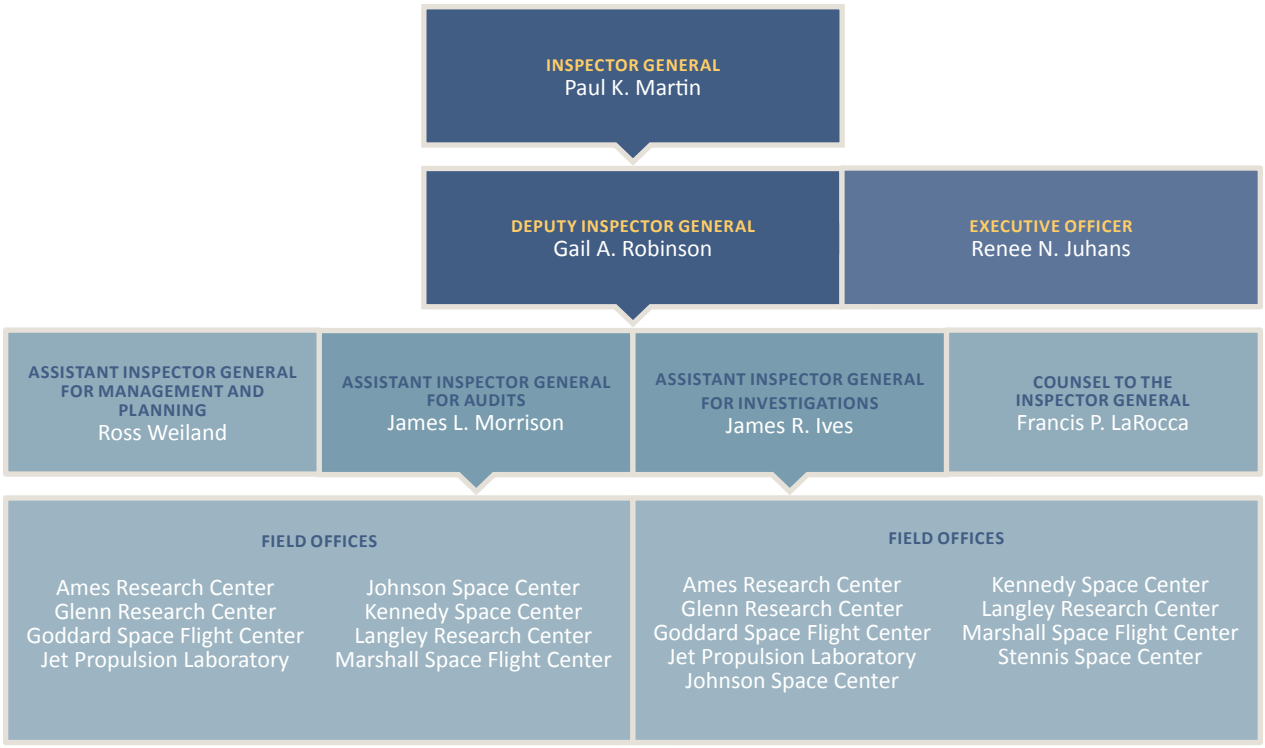
No external peer reviews were conducted of or by the Office of Investigations during this semiannual period. In October 2014, the Department of Energy's OIG reviewed the NASA OIG's Office of Investigations and found the office to be in compliance with all relevant guidelines. There are no unaddressed recommendations outstanding from that review.

APPENDIX C. ACRONYMS

AFR	Agency Financial Report
CRS	Commercial Resupply Services
DCAA	Defense Contract Audit Agency
FISMA	Federal Information Security Management Act
FY	Fiscal Year
GSA	General Services Administration
IG	Inspector General
IPIA	Improper Payments Information Act
ISS	International Space Station
JCL	Joint Cost and Schedule Confidence Level
MOBY	Marine Optical Buoy
NEN	Near Earth Network
NPR	NASA Procedural Requirements
OA	Office of Audits
OI	Office of Investigations
OIG	Office of Inspector General
OMB	Office of Management and Budget
PP&E	Property, Plant, and Equipment
PSM	Pressure System Manager
PVS	Pressure Vessels and Pressurized Systems
SBIR	Small Business Innovation Research
SLS	Space Launch System
SPF	Space Power Facility
STEM	Science, Technology, Engineering, and Mathematics
VCSFA	Virginia Commonwealth Space Flight Authority

APPENDIX D. OFFICE OF INSPECTOR GENERAL ORGANIZATIONAL CHART

The OIG's FY 2015 budget of $37 million supports the work of 195 employees in their audit, investigative, and administrative activities.



THE NASA OFFICE OF INSPECTOR GENERAL (OIG) conducts audits, reviews, and investigations of NASA programs and operations to prevent and detect fraud, waste, abuse, and mismanagement and to assist NASA management in promoting economy, efficiency, and effectiveness. The OIG's FY 2015 budget of $37.5 million supports the work of 195 employees in their audit, investigative, and administrative activities.

THE INSPECTOR GENERAL (IG) provides policy direction and leadership for the NASA OIG and serves as an independent voice to the NASA Administrator and Congress by identifying opportunities for improving the Agency's performance. The Deputy Inspector General assists the IG in managing the full range of the OIG's programs and activities and provides supervision to the Assistant Inspectors General and Counsel in the development and implementation of the OIG's diverse audit, investigative, legal, and support operations. The Executive Officer serves as the OIG liaison to Congress and other Government entities, conducts OIG outreach both within and outside NASA, and manages special projects.

THE OFFICE OF AUDITS (OA) conducts independent and objective audits and reviews of NASA programs, projects, operations, and contractor activities. In addition, OA oversees the work of an independent public accounting firm in its annual audit of NASA's financial statements.

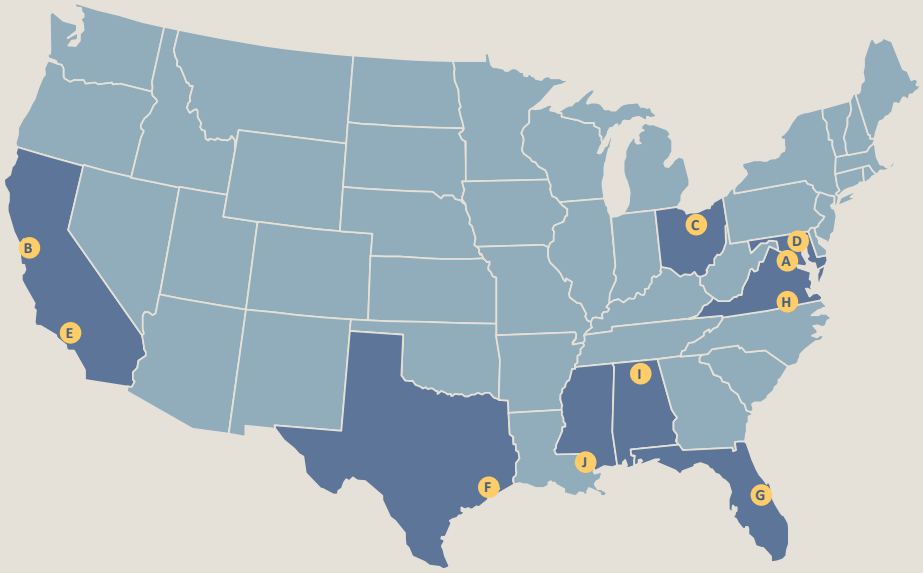
THE OFFICE OF COUNSEL TO THE INSPECTOR GENERAL provides legal advice and assistance to OIG managers, auditors, and investigators. The Office serves as OIG counsel in administrative litigation and assists the Department of Justice when the OIG participates as part of the prosecution team or when the OIG is a witness or defendant in legal proceedings. In addition, the IG has designated the Counsel as Whistleblower Protection Ombudsman, and in that role he educates Agency employees about prohibitions on retaliation for protected disclosures and about rights and remedies for protected whistleblower disclosures.

THE OFFICE OF INVESTIGATIONS (OI) investigates allegations of cybercrime, fraud, waste, abuse, and misconduct that may affect NASA programs, projects, operations, and resources. OI refers its findings either to the Department of Justice for criminal prosecution and civil litigation or to NASA management for administrative action. Through its investigations, OI develops recommendations for NASA management to reduce the Agency's vulnerability to criminal activity and misconduct.

THE OFFICE OF MANAGEMENT AND PLANNING provides financial, procurement, human resources, administrative, and information technology services and support to OIG staff.

APPENDIX E. MAP OF FIELD OFFICES

NASA OIG OFFICES OF AUDITS AND INVESTIGATIONS



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