NASA OFFICE OF INSPECTOR GENERAL

SEMIANNUAL REPORT

APRIL 1–SEPTEMBER 30, 2023

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Cover image:
The Cartwheel Galaxy is a ring galaxy located around 500 million light years away in the constellation of Sculptor. This image is a composite of images produced by the James Webb Space Telescope's NIRCam and MIRI detectors; these images were also released separately.

FROM THE INSPECTOR GENERAL

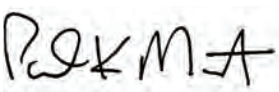
The NASA Office of Inspector General (OIG) remains committed to providing independent, objective, and comprehensive oversight of NASA programs, projects, and personnel with the singular goal of improving Agency outcomes. I remain extremely proud of the OIG staff for their continued professionalism and achievements.

For example, our Office of Audits issued multiple reports during this reporting period that examined critical Agency programs including one that closely examined contracts with Northrop Grumman for production of Space Launch System (SLS) boosters and Aerojet Rocketdyne for production of RS-25 engines. We found that NASA is experiencing significant scope growth on both contracts, as well as approximately $6 billion in cost increases and over 6 years in schedule delays. Other ongoing Artemis-related audits are examining NASA's management of the Artemis campaign's supply chain; the Agency's readiness for Artemis II, the campaign's first crewed mission; NASA's plans for managing future missions beyond Artemis IV; its management of SLS Block 1B development; and the Agency's progress in constructing Mobile Launcher 2, needed to launch larger variants of the SLS rocket beginning with Artemis IV.

During this period, we also issued audit reports that examined NASA's progress toward developing new technologies and sustainable energy options for electric aircraft propulsion; the status of the Agency's Deep Space Network, an array of radio antennas that support communication for interplanetary spacecraft missions; NASA's efforts to develop an artificial intelligence governance framework and standards; and the Agency's efforts to attract and retain a highly skilled and diverse workforce.

On the investigations side of the house, NASA OIG special agents, investigative auditors, and our data analytics and forensic staff continue to investigate fraud, waste, abuse, misconduct, and mismanagement involving NASA personnel and contractors, resulting in $2.4 million in recoveries to NASA. For example, during this period the former CEO of a nanotechnology company was sentenced to 4 years in prison and ordered to forfeit $7 million for falsely claiming a partnership with NASA in order to defraud investors. In another case our agents worked, a Florida corporation was sentenced to 5 years of probation, fined $1 million, and ordered to pay $4 million for fraudulently acquiring multiple government aircraft through the Federal Excess Property Program. The company acquired the aircraft, which included two NASA X-34 unmanned space planes, under the guise of housing them at a fictitious aviation museum. Finally, a former NASA contractor employee pled guilty to illegally transferring flight control software to a university in the People's Republic of China and was sentenced to 20 months of confinement.

This Semiannual Report summarizes the OIG's activities and accomplishments between April 1 and September 30, 2023. We hope you find it informative.



Paul K. Martin
Inspector General
October 31, 2023

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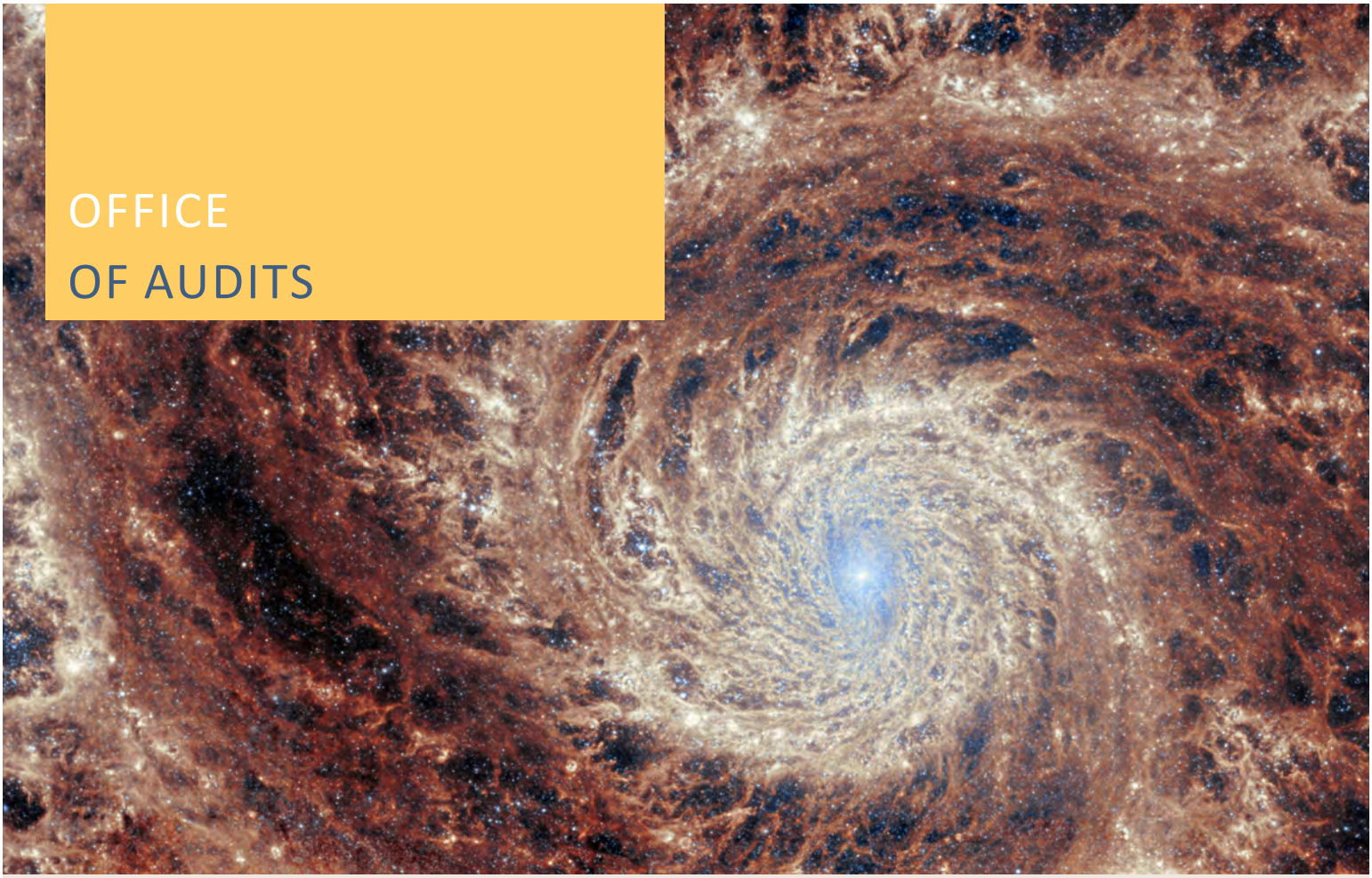


Seen here by the Mid-Infrared Instrument on the James Webb Space Telescope is the spiral galaxy M51, which lies about 27 million light-years away from Earth.

HUMAN EXPLORATION

Human exploration activities remain among NASA's most highly visible missions, with the Agency currently operating the International Space Station, managing the commercial crew and cargo programs that support the Station, and planning for future exploration beyond low Earth orbit, including ambitious goals for the Artemis campaign. Through Artemis, NASA seeks to establish a sustainable lunar presence while preparing the way for crewed missions to Mars. Our oversight of these issues generally involves operations within the Agency's Exploration Systems Development Mission Directorate, Space Operations Mission Directorate, and Space Technology Mission Directorate, as well as select portions of the Science Mission Directorate.

NASA'S MANAGEMENT OF THE SPACE LAUNCH SYSTEM BOOSTER AND ENGINE CONTRACTS

IG-23-015, MAY 25, 2023

Key to NASA's Artemis campaign is the development of the Space Launch System (SLS)—a two-stage, heavy-lift rocket with two boosters and four RS-25 engines that will launch the Orion Multi-Purpose Crew Vehicle into space. This audit examined two SLS booster contracts with Northrop Grumman and two RS-25 engine contracts with Aerojet Rocketdyne. The team found that NASA is experiencing significant scope growth on both contracts, as well as approximately $6 billion in cost increases and over 6 years in schedule delays. Long-standing management issues—including underestimating the scope and complexity of work, concurrent development and production activities, and inappropriate use of award fees—caused the delays and cost increases. NASA's poor contract management practices will impact the SLS Program and Artemis campaign, causing us to question $49.9 million in costs and award fees. Of the report's eight recommendations, the Agency concurred with five and partially concurred with the remaining three.

The Space Launch System with the Orion module at Launch Pad 39B at Kennedy Space Center.

ONGOING AUDIT WORK

NASA's Management of the Artemis Program's Supply Chain

Consisting of multiple programs and projects; more than a dozen prime contractors; and thousands of subcontractors, vendors, and suppliers, NASA's Artemis campaign is an ambitious and costly effort that seeks to return humans to the Moon and later take them to Mars. However, recent supply-chain issues and threats—exacerbated by the COVID-19 pandemic—have negatively impacted mission goals. This audit will examine NASA's management of the Artemis campaign's supply chains.

Audit of NASA's Readiness for its Artemis II Crewed Mission to Lunar Orbit

With NASA's completion of the uncrewed Artemis I test flight in December 2022, the Agency is now preparing for the crewed Artemis II mission. NASA estimates it can launch Artemis II by the end of 2024; however, prior OIG work found that this time frame may be unrealistic. With each of the early Artemis missions dependent on the success of the previous mission, any technical or safety issues encountered during Artemis I will have a cascading effect on the Artemis II mission. This audit will examine NASA's progress toward achieving its Artemis II goals.

The Artemis II crew check out their Orion crew module at Kennedy Space Center.

NASA's Management of Artemis IV and Future Missions—NASA's Transition of the Space Launch System to a Commercial Services Contract

NASA's total Artemis campaign costs are projected to reach $93 billion from fiscal year 2012 through 2025, with SLS Program costs representing 26 percent ($23.8 billion) of that total. In an effort to make Artemis missions more affordable, NASA is preparing to award a sole-source services contract, known as the Exploration Production and Operations Contract (EPOC), to Deep Space Transport, LLC—a new joint venture of The Boeing Company and Northrop Grumman Services Corporation. Our projections estimate that a single SLS rocket produced under EPOC will cost $2.5 billion, a figure NASA hopes to reduce by 50 percent. This audit will assess the extent to which EPOC is positioned to achieve the Artemis campaign's performance and affordability goals.

The Exploration Upper Stage is a four-engine in-space stage on the SLS Block 1B and Block 2 rockets, which will be used for Artemis IV and beyond.

NASA's Management of Artemis IV and Future Missions—NASA's Management of the Space Launch System Block 1B Development

Artemis IV marks the first flight of NASA's more powerful heavy-lift rocket—SLS Block 1B. This spaceflight development project and the subsequent spaceflight operations will become significantly more expensive and complex due to

the need to integrate all the disparate systems. Key to achieving this is successfully completing the development of the new upper stage—the Exploration Upper Stage—along with other modifications and integration activities. However, Block 1B system development has already experienced numerous challenges that have resulted in cost increases and schedule delays. This audit will examine NASA's management of the development of the SLS Block 1B.

The International Space Station passes over the northeast coast of the United States.

NASA's Management of Risks to Sustaining International Space Station Operations Through 2030

At a cost of approximately $4.3 billion per year, or 16 percent of NASA's annual budget, NASA expects the International Space Station (ISS) to continue operations through 2030. While the Station's structure is projected to remain viable through 2030, NASA must manage a series of evolving risks to the ISS as it ages and faces changes to its operational environment. NASA is planning for one or more commercial low-Earth orbit destinations to ultimately replace the ISS. However, until then, maintaining and managing the risks facing the ISS is imperative for sustaining a human presence in space and preparing for the Agency's deep-space goals. This audit will examine NASA's management of risks to sustaining ISS operations through 2030.

NASA's Management of the Mobile Launcher 2 Project

The Agency is developing Mobile Launcher 2 (ML-2) for future, larger variants of the SLS to support Artemis missions beginning with Artemis IV, currently planned for 2028. The prime contractor, Bechtel National, Inc., is responsible for all activities related to the design and construction the launcher. However, Bechtel has failed to meet contract requirements, and the project is over budget and delayed by at least 3 years. As of September 2023, the ML-2 contract's value had risen to over $1 billion, nearly triple the original value of $383 million. Further, construction only started in August 2023 when the first pieces of steel for the foundation were bolted together—2.5 years after the original contracted date. Given the importance of ML-2 for future Artemis missions and its exceptional cost growth to date, it is vital that NASA effectively manage the project to control future cost increases and schedule delays. This audit will examine NASA's management of the ML-2 project.

SpaceX's Dragon spacecraft atop the Falcon 9 rocket, stands tall during a static fire engine test at the pad at Launch Complex 39A at NASA's Kennedy Space Center in Florida in August 2023.

SCIENCE AND AERONAUTICS

Science missions like the Mars 2020 Perseverance Rover, Parker Solar Probe, and James Webb Space Telescope further our understanding of the universe. Meanwhile, NASA's Earth-observing missions shed light on climate change, severe weather and other natural hazards, wildfires, and global food production. And, as it has since its earliest days, the Agency continues to conduct research in pursuit of improvements and efficiencies in aviation technology. Our oversight of these areas generally corresponds to efforts undertaken by the Agency's Science Mission Directorate and Aeronautics Research Mission Directorate.

NASA'S EARTH SYSTEM SCIENCE PATHFINDER PROGRAM

IG-23-018, SEPTEMBER 5, 2023

NASA's Earth System Science Pathfinder (ESSP) Program was designed to improve scientific understanding of the global Earth system to meet the challenges of a changing climate and other environmental events (such as forest fires and floods) by funding small, rapid-development missions. This audit assessed NASA's management of the program to determine whether it is providing opportunities for projects, controlling mission and project costs, and collecting data that advances NASA's Earth system and climate research. The team found that NASA can improve its solicitation, evaluation, and selection process to help the ESSP Program better manage its projects. The OIG also found that more than half of the ESSP's unlaunched projects face cost and schedule challenges. The team also noted that societal applications to ESSP projects remain secondary to science data acquisition, and these applications are inadequately supported and underrealized. The OIG provided eight recommendations; the Agency concurred with four, partially concurred with three, and did not concur with one.

NASA'S ELECTRIFIED AIRCRAFT PROPULSION RESEARCH AND DEVELOPMENT EFFORTS

IG-23-014, MAY 17, 2023

To meet aggressive climate goals, including the administration's and aviation industry's objective to improve aircraft fuel efficiency, NASA launched the Sustainable Flight National Partnership in 2021. Under this partnership, NASA intends to demonstrate, among other things, the first-ever high-power electric aircraft propulsion (EAP) systems for single-aisle commercial transport aircraft. This audit evaluated NASA's progress toward developing new technologies and sustainable energy

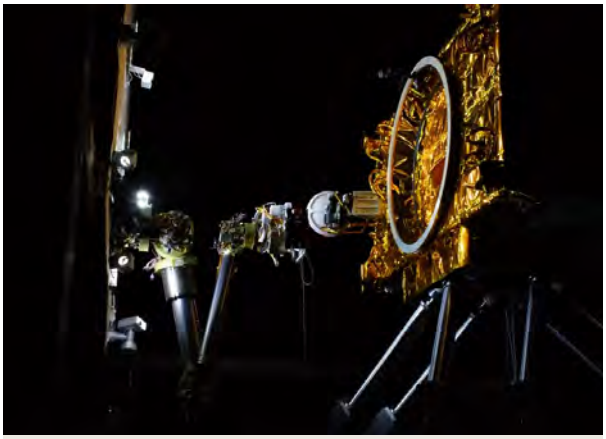
The electric motors for the X-57's Mod II vehicle and their propellers were powered up and spun together for the first time as part of an integrated spin test.

options for aircraft propulsion. The team found that NASA has funded research into conceptual and early-stage EAP technology, engaged in partnerships to develop and demonstrate EAP technologies, and devoted significant resources to flight demonstration projects—including the X-57 "Maxwell" and the Electrified Powertrain Flight Demonstration projects. Despite these promising strides, all of the EAP-related flight demonstration projects have either experienced, or show signs of, significant delays and cost overruns. The OIG found that EAP projects are seeing impacts from COVID-19 shutdowns, workforce challenges, supply-chain issues, unstable funding, and overly optimistic cost and schedule baselines. The Agency concurred with both report recommendations.

ONGOING AUDIT WORK

NASA's On-Orbit Servicing, Assembly, and Manufacturing 1 Mission

NASA's On-orbit Servicing, Assembly, and Manufacturing 1 (OSAM-1) mission intends to demonstrate first-of-its-kind technology by grappling a U.S. government–owned satellite, Landsat 7, and refueling it, thereby demonstrating the capability of extending the operational life of satellites on orbit. This audit will assess NASA's overall management of the mission relative to its cost, schedule, and technological goals.



Grapple testing of OSAM-1's Robotic Servicing Arm at Goddard Space Flight Center. The robotic arm (left) is interacting with a model of a satellite (right) in a simulated zero-gravity environment.

Audit of the Mars Sample Return Mission

The Mars Sample Return (MSR) Program is an international partnership between NASA and the European Space Agency designed to bring Martian geological samples to Earth for scientific study in the early 2030s. The MSR Program is one of the most technically complex, operationally demanding robotic space missions ever undertaken. The MSR Program is unprecedented in its technical and managerial requirements; this audit will assess the Program relative to its cost, schedule, and technological objectives.

Depicted in the foreground is one of two Sample Recovery Helicopters slated to fly to Mars as part of the Mars Sample Return Campaign.

Audit of NASA's Commercial Lunar Payload Services Initiative

In 2018, NASA created the Lunar Discovery and Exploration Program to support innovative approaches to achieve human and science exploration goals by funding contracts for commercial transportation services and the development of small rovers and instruments. Under the Program, NASA selected 14 companies to facilitate the rapid acquisition of science and technology systems delivery services to

the Moon through a new initiative known as Commercial Lunar Payload Services (CLPS). This audit will assess the effectiveness of NASA's implementation and management of the CLPS initiative and determine whether the Agency's organizational, programmatic, and acquisition approaches are effective in achieving its goals and objectives.

A pair of prototype rovers during testing at the Jet Propulsion Laboratory. The rovers are part of the Cooperative Autonomous Distributed Robotic Exploration project to map the lunar surface. They are slated to arrive on the Moon aboard a lander in 2024 as part of the CLPS initiative.

A technician at Goddard Space Flight Center installs a cover plate over the detectors for the Nancy Grace Roman Space Telescope. Each of the 18 detectors represents 16.8 million pixels of image resolution.

Audit of the Nancy Grace Roman Space Telescope Project

Since 1968, NASA has launched several significant space telescopes, including Hubble, Spitzer, and the James Webb Space Telescope. The latest space telescope mission is the Nancy Grace Roman Space Telescope, which began development in February 2016 and seeks to settle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics. This audit will assess whether the project is meeting cost, schedule, and technological goals while managing risks.

The Soyuz rocket is launched with Expedition 70 NASA astronaut Loral O'Hara, and Roscosmos cosmonauts Oleg Kononenko and Nikolai Chub in September 2023 in Kazakhstan.

MISSION SUPPORT AND INFORMATION TECHNOLOGY

Institutional services such as human capital management, procurement, infrastructure, and security are organized under NASA's Mission Support Directorate. Our oversight of these functions covers a wide array of topics, including the Agency's procurement of goods and services, operations and maintenance of facilities and infrastructure, workforce management, and physical security. We also monitor and evaluate NASA's management of its information technology (IT) assets, which is led by the Agency's Chief Information Officer, and we continue to pay close attention to the Agency's efforts to improve its IT cybersecurity practices.

NASA'S FEDERAL INFORMATION SECURITY MODERNIZATION ACT OF 2014 EVALUATION REPORT FOR FISCAL YEAR 2023

IG-23-017, AUGUST 17, 2023

The Federal Information Security Modernization Act of 2014 requires that the OIG, or an external auditor, conduct an annual evaluation of NASA's information security program and practices and report the results to the Office of Management and Budget (OMB). The OIG contracted with the independent public accounting firm RMA Associates, LLC, to conduct the evaluation. RMA reported that for fiscal year 2023, NASA's information security program was rated a Level 3 (Consistently Implemented), which means policies, procedures, and strategies were implemented consistently, but quantitative and qualitative effectiveness measures were lacking. This falls short of the Level 4 OMB rating that indicates an effective cybersecurity program. The report made 27 recommendations, and NASA concurred with all of them.

AUDIT OF NASA'S DEEP SPACE NETWORK

IG-23-016, JULY 12, 2023

NASA's Deep Space Network (DSN) is composed of an array of radio antennas that support interplanetary spacecraft missions. NASA relies on the DSN—with facilities located in California, Spain, and Australia—to provide two-way communication links that guide and control spacecraft traveling to destinations beyond low Earth orbit, such as the Moon and Mars, and bring back images and other scientific data. Much of the DSN's infrastructure, some of which was

One of many radio antennas that space agencies use to communicate with satellites.

built in the 1960s, is outdated, needs extensive maintenance that has been deferred too long, and is becoming increasingly difficult and costly to maintain. This audit assessed NASA's progress toward upgrading the Agency's DSN and the network's ability to support current and future mission requirements. NASA's DSN is currently oversubscribed and will continue to be overburdened by the demands created by an increasing number of deep space missions. Limitations on the DSN's capacity have already impacted Agency missions—with some receiving fewer hours than requested and, going forward, the network facing an even greater strain with large-capacity missions vying for the same antennas. NASA's primary solution to address DSN capacity issues is to construct additional antennas and make upgrades, but these efforts are behind schedule and over cost. The OIG made four recommendations, all of which the Agency concurred with.

NASA'S MANAGEMENT OF ITS ARTIFICIAL INTELLIGENCE CAPABILITIES

IG-23-012, MAY 3, 2023

NASA uses artificial intelligence (AI)—the capability of a machine to imitate intelligent human behavior—in a number of applications, including experiments in low Earth orbit to conduct weather modeling and to map terrain hazards for future landing sites in deeper space. This audit examined NASA's progress in developing its artificial intelligence governance framework and standards and assessed whether security controls are being implemented to protect AI data from cyberthreats. The team found that NASA has made progress toward establishing an AI governance framework and has developed an initial AI use case inventory in response to federal requirements. However, the Agency has yet to establish a standard, NASA-wide definition of AI, and its ability to identify and track AI and AI spending is inadequate to meet current federal requirements and will make implementing future federal cybersecurity controls more difficult. Without a clear definition of AI or the ability to categorize AI and track related spending, NASA's efforts to capture the entire spectrum of AI used across the Agency will be incomplete and may hobble its efforts to monitor and protect its AI use. The OIG made four recommendations, with which the Agency concurred or partially concurred.

The Ecosystem Spaceborne Thermal Radiometer Experiment on Space Station experiment uses a radiometer mounted on the International Space Station to measure the temperature of plants on Earth. The project uses AI to automatically select and schedule scientific observations.

NASA'S EFFORTS TO INCREASE DIVERSITY IN ITS WORKFORCE

IG-23-011, APRIL 20, 2023

Much of NASA's success—as a world leader in aeronautics, space exploration, science, and technology, as well as being voted the best place to work in the federal government for the past 11 years—relies on attracting and retaining a highly skilled and diverse workforce. NASA established inclusion as one of its core values and, like all federal agencies, is working to meet federal requirements to remove barriers to employment and take additional steps to expand diversity, equity, inclusion, and accessibility efforts. This audit assessed those efforts and evaluated whether NASA collects sufficient and appropriate data to monitor its progress.

We found that despite support from Agency leaders and multiple initiatives to increase diversity, NASA has made little progress in increasing the representation of women and minority groups in its civilian workforce or leadership ranks. Over the past decade, NASA's overall workforce demographics have stayed roughly the same. NASA's lack of progress toward increasing diversity in its workforce is due to its siloed approach to diversity, equity, inclusion, and accessibility efforts; being overly focused on meeting reporting requirements; gaps in training and development opportunities; and limited recruiting resources. The team also found that NASA lacks a consolidated, authoritative source for its demographic data. The report included seven recommendations; the Agency concurred with six and partially concurred with one.

ONGOING AUDIT WORK

Audit of NASA's Science, Technology, Engineering, and Math (STEM) Engagement

The success of NASA's missions, programs, and projects relies on the Agency attracting and retaining a highly skilled and diverse STEM workforce with varied technical and managerial skills. In FY 2021, approximately 66 percent of the 18,000 civil service employees at NASA facilities nationwide worked in the science and engineering fields. The Agency's Office of STEM Engagement seeks to build the next generation of workers and broaden student participation to increase diversity, equity, and inclusion in STEM fields. This audit will evaluate whether NASA is effectively implementing STEM engagement activities and outreach efforts to meet its strategic goals and objectives.

Students participating in STEM Engagement programs pose in front of a rocket at Wallops Flight Facility. The RockOn and RockSat programs give students the opportunity to develop flight experiments and see those experiments launch through the Sounding Rocket Program.

Audit of NASA's Privacy Program

The Privacy Act of 1974 governs the handling of personal information in the federal government and requires agencies to abide by a code of fair information practices that creates a foundation for trust between individuals and the government regarding use of their personal data. NASA's Privacy Program, within the Office of the Chief Information Officer, is responsible for implementing and managing personal information protections and Agency compliance with laws and regulations. This audit will evaluate whether NASA has implemented a comprehensive privacy program to protect personal information collected, used, and disseminated by the Agency.

Audit of NASA's High-End Computing Program

NASA's High-End Computing Program provides computing systems and services to support the Agency's aeronautics, exploration, science, and space technology missions. High-end computing enables scientists and engineers to model and analyze data up to 10 times faster and view results at a higher fidelity. This audit will assess NASA's management of its High-End Computing Program, specifically the Agency's processes and controls related to the Program's policy framework, capacity planning, stakeholder engagement, and cybersecurity.

The Soyuz rocket is seen in this 90-second exposure as it launches with Expedition 70 NASA astronaut Loral O'Hara, and Roscosmos cosmonauts Oleg Kononenko and Nikolai Chub in September 2023 in Kazakhstan.

FINANCIAL MANAGEMENT

The OIG and its independent external auditor continue to assess NASA's efforts to improve its financial management practices by conducting and overseeing a series of audits—including the annual financial statement audit—to help the Chief Financial Officer and the Agency identify and address weaknesses. We also assess single audits of NASA grantees performed by external independent public accounting firms. The single audits provide NASA and stakeholders with assurance that these award recipients comply with federal reporting directives and assist the Agency in performing pre-award risk assessments and post-award monitoring efforts.

AUDIT OF NASA'S COMPLIANCE WITH THE PAYMENT INTEGRITY INFORMATION ACT FOR FISCAL YEAR 2022

IG-23-013, MAY 16, 2023

The Payment Integrity Information Act of 2019 (PIIA) was enacted to improve efforts to identify and reduce federal improper payments. As mandated, we evaluated whether NASA complied with the requirements of PIIA in FY 2022. We reviewed NASA's Agency Financial Report, accompanying materials on PaymentAccuracy.gov, risk assessments, and the sampling and estimation methodology plan for programs deemed susceptible to significant improper payments, and we found that NASA complied with PIIA for FY 2022. However, we found opportunities for improvement in the Agency's risk assessment and reporting processes. Specifically, improvements are needed in NASA's quality assurance review to ensure ratings are properly assigned to risk factor questions and risk condition levels. Additionally, NASA continued to include nonpayment transactions, which resulted in incomplete information published on PaymentAccuracy.gov and inappropriate financial factors used in the materiality risk calculation and sampling and estimation methodology. Furthermore, NASA's reported overpayment information on PaymentAccuracy.gov was again inaccurate for the FY 2022 reporting period. In addition to noting that corrective actions to address prior recommendations were insufficient, the OIG made one new recommendation, with which the Agency concurred.

ONGOING AUDIT WORK

Audit of NASA's Fiscal Year 2023 Financial Statements

The Chief Financial Officers Act of 1990, as amended by the Government Management Reform Act of 1994, requires an annual audit of NASA's consolidated financial statements. We are overseeing the FY 2023 audit conducted by the independent public accounting firm Ernst & Young LLP.

Desk Reviews of Select NASA Grantee Single Audits

We are reviewing single audits of NASA grantees performed by independent public accounting firms. The purpose of these reviews is to determine whether the firm's single audit report and data collection form met generally accepted government auditing standards and requirements in the Code of Federal Regulations.

The first anniversary image from NASA's James Webb Space Telescope displays star birth like it's never been seen before, full of detailed, impressionistic texture. The subject is the Rho Ophiuchi cloud complex, the closest star-forming region to Earth.

STATISTICAL DATA

TABLE 1: AUDIT PRODUCTS ISSUED AND NOT DISCLOSED TO THE PUBLIC, CURRENT SEMIANNUAL REPORT

Report No. and Date Issued	Report Title	Objective
IG-23-019, 9/25/2023	NASA's Vulnerability Assessment and Penetration Testing Report for the Fiscal Year 2023 Financial Statement Audit	Assessed internal and external vulnerabilities of NASA's network segment of its financial systems.
ML-23-007, 8/14/2023	Desk Review of the National Council on Radiation Protection and Measurements' Fiscal Year 2021 Single Audit Reporting Package	Determined whether the audit report met generally accepted government auditing standards and the Uniform Guidance audit requirements.
ML-23-006, 5/12/2023	Desk Review of the Resources for the Future, Inc.'s Fiscal Year 2021 Single Audit Reporting Package	Determined whether the audit report met generally accepted government auditing standards and the Uniform Guidance audit requirements.

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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
Human Exploration			
IG-23-015, 5/25/2023	NASA's Management of the Space Launch System Booster and Engine Contracts		
	2. Coordinate with the Marshall procurement office to identify procurement needs and resources available under MAP to address staff capacity shortages at the senior procurement level to ensure sufficient oversight roles are staffed and separated from the contract actions.	7/31/2023	$0
	3. Ensure Marshall procurement, legal, project planning and control, and SLS and booster program officials comply with best practices for establishing and maintaining internal controls, specifically on the appropriate process and procedures on REAs, fiscal law, and appropriate internal and external engagement.	9/30/2023	$24,500,000
	4. Ensure Elements and procurement management comply with appropriate separation of roles and responsibilities for program and procurement actions and the FAR with respect to use of letter contracts, proper definitization, overpayments, and duplicative payments of award fees for modified scope and contracts.	10/1/2023	$0
	5. Update RS-25 production per engine cost estimate to include investment costs in restart facilities, equipment, new production overhead costs, and government-funded property.	12/31/2023	$0
	6. Conduct a thorough review of BPOC's scope of work and technical requirements needed to complete the respective periods of performance and update the contract as appropriate.	11/30/2023	$0
	7. Conduct a thorough review of BPOC's definitization to ensure proper liquidation of funds paid under the letter contract as progress payments are returned to the Agency and are appropriately paid when the performance of the work, per the contract, is completed.	7/31/2023	$5,600,000
	8. Develop a separate non-fee-bearing contract line item for completion of the 11 unfinished heritage RS-25 adaptation engines.	6/30/2023	$19,767,103

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
Science and Aeronautics			
IG-23-018, 9/5/2023	NASA's Earth System Science Pathfinder Program		
	2. Reexamine its selection process to ensure PIs or their teams have sufficient experience, including project management, and the ability to dedicate necessary resources to effectively manage ESSP projects.	9/30/2024	$0
	3. Reissue and require SMD stakeholders to follow the tenets of the 2017 decision memorandum on Class D missions.	12/19/2023	$0
	4. In collaboration with NASA's Launch Services Program, develop a process to engage early and evaluate alternative launch options in the event that ESSP projects encounter access to space issues.	11/30/2023	$0
	5. Conduct a lessons learned review of the GeoCarb mission to identify what NASA, PI, and contractor practices and activities should be revised and applied to the management of future Earth Venture Class projects.	9/30/2024	$0
	6. Develop a plan to provide PIs and their teams with contract and project management training post-selection approval to better equip them to manage subcontractors.	4/30/2024	$0
	7. Develop formal and clear guidance on the roles, responsibilities, and expectations for the inclusion of applications within Earth Venture Class projects.	9/30/2024	$0
	8. Develop a methodology for funding applications in Earth Venture Class projects.	4/30/2024	$0
IG-23-014, 5/17/2023	NASA's Electrified Aircraft Propulsion Research and Development Efforts		
	1. Coordinate with Agency JCL experts in addressing estimation challenges relative to X-plane development and lower TRL efforts and adjust risk analyses accordingly to derive higher probability/confidence cost and schedule estimates.	12/29/2023	$0
	2. Re-evaluate ARMD's planning and support of the U.S. 2021 Aviation Climate Action Plan priorities and commit project resources and funding accordingly to minimize funding instabilities for these efforts.	9/29/2023	$0
Mission Support and Information Technology			
IG-23-017, 8/17/2023	NASA's Federal Information Security Modernization Act of 2014 Evaluation Report for Fiscal Year 2023		
	1. Implement necessary oversight to monitor RISCS for accuracy and completeness, so RISCS provides sufficient support for decision-making and determining compliance with federal requirements.	2/29/2024	$0
	2. Ensure the information system owner of the systems selected for testing perform a system inventory of software assets and licenses used within the system boundaries and updates RISCS as necessary.	2/29/2024	$0
	3. Implement necessary oversight to monitor RISCS for accuracy and completeness of software and license information.	2/29/2024	$0
	4. Continue its efforts in developing policies, procedures, and processes for risk framing, risk response, and risk monitoring.	2/29/2024	$0
	5. Continue its efforts to develop and implement the necessary entity-wide oversight policy and procedures to monitor risk through a risk register and a risk profile that provide enterprise-wide metrics to inform top management of its IT risks.	2/29/2024	$0
	6. Implement the necessary oversight of RISCS to ensure that ISOs take action to review, update, and approve POA&Ms and RBDs, as necessary, before they become delinquent, taking into consideration the length of time required to obtain necessary approvals, and update RISCS.	2/29/2024	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	7. Ensure the system owners of the systems selected for testing address past due POA&Ms and RBDs	2/29/2024	$0
	8. Revise its policies and procedures to document and implement a lessons learned process based on risk events within the ISCM and Risk Management areas. System security personnel should be instructed to record, analyze, and revise control activities to improve NASA's security posture.	2/29/2024	$0
	9. Incorporate supplier risk evaluations into its continuous monitoring practices.	2/29/2024	$0
	10. Continue developing and implementing plans to integrate its C-SCRM controls and processes across the three Agency levels.	7/31/2024	$0
	11. Continue to implement the necessary entity-wide oversight to improve enforcement mechanisms and controls to ensure all standard baselines and vulnerabilities are monitored and remediated in accordance with Federal and Agency requirements.	7/31/2024	$0
	12. Continue the ongoing effort to enforce mandatory multifactor authentication using a NASA identity-based account and token from Agency ICAM service offerings (i.e., NASA PIV, Agency Smart Badge) for all information systems in NASA's environment.	2/29/2024	$0
	13. Ensure each information system owner of the systems selected for testing implements multifactor authentication for its non-privileged users.	2/29/2024	$0
	14. Develop and implement an ISCM Strategy in accordance with OMB Circular No. A-130, Managing Information as a Strategic Resource, and NIST SP 800-137A, Assessing Information Security Continuous Monitoring (ISCM) Programs: Developing an ISCM Program Assessment, including defining metrics, status monitoring frequencies, and control assessment frequencies.	2/29/2024	$0
	15. Ensure that the security controls in control families PM, PT, and SR are updated and defined within the Agency's ISCM strategy.	2/29/2024	$0
	16. Document the NMI process in NASA's ISCM Strategy to ensure its hardware inventory monitoring process is accurate, complete, and fully aligns with NASA's other continuous monitoring guidance and integrates processes, associated outputs, and incorporates results to provide situational awareness.	2/29/2024	$0
	17. Implement the necessary oversight to monitor RISCS for delinquent or invalid ATOs and SARs so that RISCS provides sufficient information to determine NASA's risk exposure.	2/29/2024	$0
	18. Ensure ATOs and SARs are properly completed for the systems selected for testing.	2/29/2024	$0
	19. Ensure each information system owner of the systems selected for testing (1) updates the SSP to specify the specific application associated with the implementation statement for each NIST SP 800-53 Revision 5 control, and (2) has the system controls assessed by an independent assessor.	2/29/2024	$0
	20. Continue its efforts to prioritize projects that address the complexities required across EL tiers to meet the intermediate (EL2) maturity level in accordance with OMB M-21-31.	7/31/2024	$0
	21. Design and implement the necessary entity-wide oversight, enforcement mechanisms, and controls to ensure all system-level BIAs are accurate and reviewed annually.	2/29/2024	$0
	22. Review all information systems to determine if a BIA has been performed in accordance with NASA policy.	2/29/2024	$0
	23. Ensure each information system owner of the systems selected for testing performs and completes a system-level BIA.	2/29/2024	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	24. Implement the necessary oversight to monitor RISCS for delinquent testing of contingency plans.	7/31/2024	$0
	25. Ensure each information system owner of the systems selected for testing conducts a test of its contingency plan annually.	7/31/2024	$0
	26. Ensure each information system owner of the systems selected for testing confirms the adequacy of its recovery procedures and the plan's overall effectiveness.	7/31/2024	$0
	27. Ensure that each information system owner of external systems has a current ISA that defines how each entity will manage, operate, use, and secure the interconnection.	7/31/2024	$0
IG-23-016, 6/12/2023	Audit of NASA's Deep Space Network		
	1. Explore more efficient options for DSN scheduling, such as maintaining a list of DSN users by priority that is updated in real-time and accessible to all users.	9/30/2025	$0
	2. Ensure completion of the DAEP's remaining antennas and transmitters and finalize requirements for the LEGS project.	10/31/2029	$0
	3. Finalize international agreements, obtain appropriate clearances for installing the remaining 80 kW transmitters, and establish mechanisms to allow for greater oversight of DAEP project sites.	10/31/2029	$0
	4. Explore options for utilizing commercial and international partners networks to offload excess demand from the DSN and to serve as backups in the event of network overages or outages.	12/31/2023	$0
IG-23-012, 5/3/2023	NASA's Management of Its Artificial Intelligence Capabilities		
	1. Establish a standardized definition for AI within the Agency, to include harmonizing the definitions in the NASA Framework for the Ethical Use of Artificial Intelligence (AI), NASA's Responsible AI Plan, and NASA AIML SharePoint.	4/30/2024	$0
	2. Ensure the standardized AI definition is used to identify, update, and maintain the Agency's AI use case inventory.	7/31/2024	$0
	4. Develop a method to track budgets and expenditures for AI use case inventory.	4/30/2024	$0
IG-23-011, 4/20/2023	NASA's Efforts to Increase Diversity in Its Workforce		
	1. Ensure hiring and promotion managers across NASA receive appropriate training to increase DEIA awareness on topics such as implicit bias and inclusive leadership.	12/31/2023	$0
	2. Ensure leadership-related professional development courses and detail assignments are widely available to prepare a more diverse cohort of employees for promotional opportunities.	12/31/2023	$0
	3. Establish a comprehensive Agency-wide mentoring program for both mid-level (GS-11, GS-12, and GS-13) and senior level employees at all NASA Centers.	12/31/2023	$0
	4. Conduct a barrier analysis to identify obstacles restricting women and minorities from senior management positions and develop a plan to address and eliminate these obstacles.	12/31/2023	$0
	5. Develop a plan that consistently utilizes ERGs to conduct supplemental recruiting activities.	12/31/2023	$0
	6. Conduct an analysis of all applicant data, including veterans, to better understand hiring trends and outcomes.	12/31/2024	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	7. Designate an official or organization to oversee coordination between the stakeholders to develop a sustainable operation and funding structure for the EDP.	9/30/2024	$0
Financial Management			
IG-23-019, 9/25/2023	NASA's Vulnerability Assessment and Penetration Testing Report for the Fiscal Year 2023 Financial Statement Audit[a]		
IG-23-013, 5/16/2023	Audit of NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2022		
	1. Enhance the *NASA PIIA: Risk Assessment Methodology* document by including detailed information and job aids, such as a checklist, and outlining the review procedures to ensure that a thorough review of the risk assessment ratings is performed before approving the risk assessment. The review procedures should include steps to verify that risk factor question ratings are accurate and that risk condition-level ratings correspond to their underlying risk factor ratings.	5/31/2024	$0

[a] This table omits 4 recommendations from IG-23-019 that NASA determined to be sensitive or classified and therefore unsuitable for release.

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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
Human Exploration			
IG-23-004, 1/17/2023	NASA's Partnerships with International Space Agencies for the Artemis Campaign		
	1. Establish a coordination strategy with NASA's international partners that includes recurring forums specifically for Artemis Accords signatories that are (or are interested in) participating in the Artemis campaign.	8/31/2023	$0
	2. Establish NASA-led Artemis campaign boards and working groups for partners with agreed-upon commitments with NASA and provide opportunities for liaison representation from international partner agencies.	3/31/2024	$0
	4. Perform a detailed gap analysis and cost estimate for Artemis missions beyond Artemis IV that will help inform a cost-sharing strategy with international partners.	unresolved[a]	$0
	5. Establish a full-time export control team dedicated to the various Artemis programs in support of space flight developments.	12/31/2023	$0
	6. Review export control requirements and consider additional roles for partner astronauts to increase their utilization in NASA space flight operations, to include amending existing agreements if necessary.	6/30/2024	$0
	7. Establish a full-time export control team dedicated to the Artemis programs in support of space flight operations.	12/31/2023	$0
	8. Coordinate with other federal agencies to gain a unique EAR classification for the Gateway as appropriate.	3/31/2023	$0
	9. In conjunction with NASA's Mission Directorates and the State Department, execute appropriate Artemis agreements with key international space agency partners to ensure partner roles and responsibilities are clearly understood and allow for efficient and timely partnerships in support of Artemis.	3/31/2024	$0
	10. Develop an automated routing method for the processing of international agreements within NASA.	6/30/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
IG-23-005, 12/19/2022	Review of NASA's Space Technology Mission Directorate Portfolio		
	1. Reexamine its SPAR data system to ensure it provides as accurate and complete a picture of project costs as is practicable.	12/31/2023	$0
	2. Update its STARPort data system with complete information on project alignment to STAR desired outcomes for all projects active in FY 2021 and beyond.	3/31/2024	$0
	3. Complete efforts to develop additional outcome-based performance measures based on the transition, advancement, and infusion of technologies.	12/30/2024	$0
IG-22-012, 6/9/2022	NASA's Management of the Mobile Launcher 2 Contract		
	1. Evaluate Bechtel's support for the updated estimate of cost and schedule at project completion and finalize negotiations for Bechtel's currently proposed cost increases and NASA's government-driven changes.	7/31/2023	$0
	2. Before completing and finalizing the ML-2 project-level ABC, update the JCL analysis to reflect realistic life-cycle cost and schedule estimates to ensure effective budgeting and management of the project.	6/30/2023	$0
	3a. To the extent that some or all of the Bechtel contract is converted to a fixed-price contract, ensure that an Independent Government Cost Estimate (IGCE) is established before entering into any new contractual agreements.	9/30/2023	$0
	3b. To the extent that some or all of the Bechtel contract is converted to a fixed-price contract, ensure that the Critical Design Review has been completed in accordance with NASA's life-cycle policies prior to conversion.	9/30/2023	$0
	5. Issue policy guidance to reinforce current FAR and NASA FAR Supplement regulatory guidance for stopping or withholding payments to a contractor for significant deficiencies in business systems, such as the EVMS.	6/30/2023	$0
IG-22-007, 1/11/2022	NASA's Management of its Astronaut Corps		
	3. At least 18 months prior to the planned Artemis II launch, coordinate with Artemis program offices to complete the development and chartering of the framework of Artemis boards and panels to ensure alignment with future mission training needs for new vehicles and missions, including Orion, next-generation spacesuits, HLS, and Gateway.	8/21/2023	$0
IG-22-005, 11/30/2021	NASA's Management of the International Space Station and Efforts to Commercialize Low Earth Orbit		
	1. In order to mitigate risks to the Station's structural integrity, ensure the risks associated with cracks and leaks in the Service Module Transfer Tunnel are identified and mitigated prior to agreeing to an ISS life extension.	1/31/2024	$0
IG-22-003, 11/15/2021	NASA's Management of the Artemis Missions		
	1. Develop a realistic, risk-informed schedule that includes sufficient margin to better align Agency expectations with the development schedule.	9/30/2023	$0
	3. Develop an Artemis-wide cost estimate, in accordance with best practices, that is updated on an annual basis.	2/28/2024	$0
	4. Maintain an accounting of per-mission costs to increase transparency and establish a benchmark against which NASA can assess the outcome of initiatives to increase the affordability of ESD systems.	2/28/2023	$0
	6. Develop a realistic funding profile and schedule given the underfunding of HLS in FY 2021, the selection of one HLS award, and the desire to compete a sustainability contract for future lunar missions.	9/30/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
IG-21-027, 9/8/2021	NASA's Construction of Facilities		
	1. Develop and institute an agency-wide process to prioritize and fund institutional and programmatic CoF projects that align with Agency-level missions and goals and require business case analyses to be completed and considered as part of the process prior to the project's approval.	1/31/2024	$0
	2. Revise NPR 8820.2G to define and establish parameters for the use of institutional and programmatic CoF funds and establish a cost-sharing method for facilities that will have more than one user.	1/31/2024	$0
	3. In coordination with the Mission Directorates, institute a process to ensure facility requirements are identified and funding sources are specified during a program's development and implementation phases.	12/30/2022	$0
IG-21-004, 11/10/2020	NASA's Management of the Gateway Program for Artemis Missions		
	1. Baseline the Gateway requirements and specifications in contract modifications prior to updating and awarding the PPE and HALO fixed-price contracts.	7/31/2023	$0
	2. Ensure PPE and HALO delivery and launch dates are realistic by including sufficient schedule margin in the development schedule.	7/31/2023	$0
	3. Develop a HEOMD policy that establishes a reasonable amount of recommended schedule margin by phase of the program or project.	9/30/2023	$0
IG-21-002, 10/27/2020	NASA's Management of its Acquisition Workforce		
	1. To help ensure the success of the MAP transformation, we recommend NASA's Assistant Administrator for Procurement finalize and fully implement the Performance Metrics Dashboard to measure acquisition performance.	12/1/2023	$0
	2. To help ensure the success of the MAP transformation, we recommend NASA's Assistant Administrator for Procurement document contract assignments to COs, CORs, and program/project managers in a centralized system for inclusion in the Performance Metrics Dashboard.	12/1/2023	$0
IG-20-018, 7/16/2020	NASA's Management of the Orion Multi-Purpose Crew Vehicle Program		
	2. To the extent practicable, adjust the production schedules for Artemis IV and V to better align with the successful demonstration of Artemis II to reduce schedule delays associated with potential rework.	12/31/2023	$0
IG-20-013, 3/17/2020	Audit of NASA's Development of Its Mobile Launchers		
	3. Ensure life cycle and milestone reviews incorporate programmatic and technical risks and are conducted with the Associate Administrator for Human Exploration and Operations Directorate and other senior Agency officials.	9/1/2023	$0
	4. Require the ML-2 project to develop an ABC separate from the EGS Program.	9/1/2023	$0
IG-20-012, 3/10/2020	NASA's Management of Space Launch System Program Costs and Contracts		
	2a. Review HEOMD and NASA program management policies, procedures, and ABC reporting processes to provide greater visibility into current, future, and overall cost and schedule estimates for the SLS Program and other human space flight programs.	12/31/2023	$0
	2b. Establishing methodologies and processes to track and set cost commitments for Artemis II.	4/29/2022	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	2c. Determining reporting and tracking procedures for setting cost and schedule commitments, and monitoring progress throughout the entire life cycle of the SLS Program (through at least 2030).	12/31/2023	$0
IG-20-011, 3/3/2020	NASA's Management of Distributed Active Archive Centers		
	1. In conjunction with ESDIS, once SWOT and NISAR are operational and providing sufficient data, complete an independent analysis to determine the long-term financial sustainability of supporting the cloud migration and operation while also maintaining the current DAAC footprint.	3/31/2024	$0
IG-20-005, 11/14/2019	NASA's Management of Crew Transportation to the International Space Station		
	2. Correct identified safety-critical technical issues before the crewed test flights, including parachute and propulsion systems testing, to ensure sufficient safety margins exist.	7/31/2023	$0
IG-17-012, 3/9/2017	NASA's Management of Electromagnetic Spectrum		
	2. Incorporate the "Spectrum Guidance for NASA Small Satellite Missions" into formal NASA spectrum policies—NASA Policy Directive 2570.5E, "NASA Electromagnetic Spectrum Management - Revalidated 9/13/16," and NPR 2570.1C, "NASA Radio Frequency Electromagnetic Spectrum Management Manual."	12/31/2023	$0
Science and Aeronautics			
IG-23-010, 3/20/2023	NASA's Management of Its Radioisotope Power Systems Program		
	1. Create an RPS resource allocation and technology development strategic plan that includes an evaluation and mitigation of risks for each project through its completion and provide a communication plan to stakeholders and mission managers.	12/1/2024	$0
	2. Conduct high quality, frequent, and routine self-assessment TRAs by project management beginning after the initial implementation of a technology development project as a basis for TRL assessment and risk management discussions.	12/31/2024	$0
	3. Per Title 51 and NPR 7120.5F, recalculate the life-cycle costs for Next-Gen RTG and DRPS projects to include funding NASA provides to DOE.	3/31/2026	$0
	4. Institute an EVM process for Next-Gen RTG and DRPS projects that conforms with NASA policy, FAR requirements, and industry best practices.	3/31/2026	$0
	5. For Next-Gen RTG and DRPS development efforts that transition to a space flight project, execute a JCL analysis at the proper phases in accordance with NPR 7120.5F.	3/31/2026	$0
	6. In coordination with DOE, develop a means for the RPS Program to obtain high-fidelity Pu-238 and fueled clad current and future inventory information.	5/30/2024	$0
	7. Develop a means to quantify risk of future Pu-238 and fueled clad availability that can be communicated to NASA mission managers and incorporated into mission development proposals and plans.	1/31/2024	$0
	8. Leverage the RPS Program's existing business processes with its element structure to monitor fission technology development for SMD feasibility and educate stakeholders on the possibilities and differences.	9/30/2024	$0
	9. Reevaluate the need and if appropriate reauthorize the organizational position of the Nuclear Power and Propulsion System Capability Leadership Team through the appropriate Mission Directorate and provide the Team responsibility for monitoring and advocating strategic nuclear power coordination across NASA.	9/30/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
IG-22-013, 06/14/2022	NASA's Management of the Earth Science Disasters Program		
	1. Establish and document Program management requirements in a strategic plan and/or NPR 7120.8 project plan format for consistent messaging on ESDP priorities, objectives, and quantifiable performance metrics.	5/31/2024	$0
	2. Perform a funding analysis of ESDP to determine if current resources are adequate to manage, oversee, and administer Program goals and objectives in accordance with its strategic plan and/or project plan.	9/30/2024	$0
	3. In accordance with the Stafford Act, coordinate with appropriate NASA offices to develop Memorandums of Understanding (MOUs) that facilitate reimbursement agreements with applicable federal agencies that request Agency support for disaster events.	12/31/2023	$0
IG-22-011, 4/7/2022	NASA's Cost Estimating and Reporting Practices for Multi-Mission Programs		
	3. Should NASA elect to estimate, track, and report life-cycle costs for major programs or activities that exceed $250 million by component rather than by mission, include estimates for each component in the MPAR and provide Congress a cost estimate, outside of the MPAR, for each Artemis mission currently planned, starting no later than Artemis III.	12/31/2026	$0
	4. Develop a formal process by which a risk-based probabilistic analysis is conducted to cover the global and interdependency risks of major programs and projects when those individual projects are required for the successful implementation of a mission; regardless of how those programs/projects are categorized (i.e., tightly coupled, single-project program, etc.).	6/30/2023	$0
	7. Establish procedural requirements for a risk posture analysis to ensure that major programs supporting multiple missions identify and estimate the cost and schedule impact of global and major interdependency risk.	12/31/2023	$0
IG-22-010, 4/6/2022	NASA's Volatiles Investigating Polar Exploration Rover (VIPER) Mission		
	1. Coordinate with the Chief Knowledge Officer to submit and at appropriate intervals document and publish lessons learned associated with using a CLPS provider, particularly on major acquisitions.	12/15/2023	$0
	2. Develop a VIPER mission cost estimate that includes all critical mission components and risks, specifically associated with the Astrobotic task order, and update the MPAR accordingly.	12/15/2023	$0
	3. Update NPR 7120.8 to require major acquisition projects that cost over $250 million to complete a JCL analysis.	12/31/2023	$0
	4. Update NPR 7120.8 to require major acquisition projects that cost over $250 million to implement EVM.	12/31/2023	$0
IG-21-011, 1/27/2021	NASA's Efforts to Mitigate the Risks Posed by Orbital Debris		
	1. Lead national and international collaborative efforts to mitigate orbital debris including activities to encourage active debris removal and the timely end-of-mission disposal of spacecraft.	6/30/2022	$0
	2. Collaborate with Congress, other federal agencies, and partners from the private and public sectors to adopt national and international guidelines on active debris removal and strategies for increasing global compliance rates for timely removal of spacecraft at the end of a mission.	6/30/2022	$0
	3. Invest in methods and technologies for removing defunct spacecraft. As part of this effort, conduct a study evaluating the technical merit and cost to investing in active debris removal systems and technologies.	12/31/2025	$0
IG-21-006, 12/3/2020	NASA's Management of Hazardous Materials		

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	5. Assess various options for development and implementation of an Agency-wide hazardous materials information system that tracks hazardous materials throughout the life cycle, and ensure processes are in place to consistently maintain a complete and accurate inventory.	7/31/2023	$0
	7. Require Center Directors to inspect and replace, as required, laboratory hazardous material storage structures and improve shelters that do not follow CDC guidelines or comply with Agency requirements.	10/1/2023	$0
IG-20-023, 9/16/2020	NASA's Planetary Science Portfolio		
	2. In coordination with the Office of Chief Financial Officer, engage relevant Centers and technical capability leaders to implement budgetary and accounting system options to support critical discipline capabilities.	12/15/2023	$0
IG-19-019, 5/29/2019	Management of NASA's Europa Mission		
	Reassess the process of isolating key project personnel from instrument selection to balance their additional insight in integration and cost estimation while maintaining fairness in the announcement and mitigating conflict of interest risks.	12/15/2023	$0
Mission Support and Information Technology			
IG-23-008, 1/12/2023	NASA's Software Asset Management		
	1. Establish enterprise-wide (institutional and mission) Software Asset Management policy and procedures.	12/10/2023	$0
	2. Implement a single Software Asset Management tool across the Agency.	10/1/2027	$39,000,000
	5. Establish a software license awareness training 'short course' focusing on approvals, compliance, and other issues a general user might encounter.	3/29/2024	$0
	6. Implement a centralized repository for NASA's internally developed software applications.	10/31/2024	$0
	7. Develop an Agency-wide process for limiting privileged access to computer resources in accordance with the concept of least privilege.	12/1/2023	$0
	9. Centralize software spending insights to include purchase cards.	9/29/2023	$0
IG-22-015, 8/4/2022	Ames Research Center's Lease Management Practices		
	1. Conduct cyclical reviews (no less than once every 5 years) of the Ames lease process to ensure compliance with federal and NASA requirements.	12/31/2023	$0
	2. Update applicable real estate policies and NASA-wide guidance to enhance requirements and procedures to comply with EUL authority and to require maintaining appropriate documentation, documenting decisions, and fostering transparent coordination and communication with internal and external stakeholders in a timely manner.	12/31/2023	$0
	3. Update applicable real estate policies and NASA-wide guidance to enhance requirements and standardize applicable financial practices (such as the benefit and cost analysis, life-cycle cost analysis, and audits of tenants' books and records when required) associated with leases.	12/31/2023	$0
	4. Update applicable real estate policies and NASA-wide guidance to incorporate applicable security requirements and agreement clauses in leases.	9/30/2023	$0
	5. Implement written procedures in the lease process to ensure compliance with federal and NASA requirements applicable, but not limited to, timely involvement of the RPAO, competition, life-cycle cost analysis, fair market value assessments, certifications, and termination clauses as appropriate.	9/30/2024	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	9. Within the next 3 years, conduct a Center-wide security vulnerability risk assessment, including the districts outside Ames Campus, to ensure compliance with federal and NASA requirements.	6/30/2025	$0
	10. Identify and implement mitigation strategies and resource requirements to address the security vulnerability assessment risks.	6/30/2025	$0
IG-22-009, 3/14/2022	NASA's Insider Threat Program		
	2. Improve cross-discipline communication by establishing a Working Group that includes OPS, OCIO, Procurement, human resource officials, and any other relevant Agency offices to collaborate on wide-ranging insider threat related issues for both classified and unclassified systems.	12/1/2023	$0
IG-21-001, 10/2/2020	Audit of NASA's Compliance with the Geospatial Data Act		
	2. Develop a unified Strategy Implementation Plan or "Roadmap" that defines detailed action items, milestones, and responsibilities for geospatial data management in support of missions across NASA.	9/29/2023	$0
IG-20-001, 10/21/2019	NASA's Security Management Practices		
	4. Evaluate Agency-wide jurisdictions to determine if it is feasible for all Centers to be under the same jurisdiction or at least to determine if individual Centers should have all of their property under the same type of jurisdiction.	12/31/2023	$0
	5. Coordinate with the Office of General Counsel to standardize the carrying of firearms by NASA civil servants in an Agency-wide policy while also addressing the appropriate situations when NASA contractors may carry their government-issued weapons off NASA property.	2/28/2024	$0
IG-19-002, 10/22/2018	Audit of NASA's Historic Property		
	2. Develop comprehensive procedures for identifying and managing heritage assets, including defining roles and responsibilities for the different NASA entities responsible for evaluating what historic items would most effectively be maintained by the Agency and considered as heritage assets.	12/1/2023	$0
	3. Evaluate and justify the existing list of NASA and contractor held heritage assets to determine whether NASA is the most effective owner and what property the Agency will retain because of its historical value.	12/1/2024	$0
	5. Ensure NASA policy for using the proceeds from facilities leased under NHPA authority appropriately aligns with Agency goals to minimize excess facilities.	2/29/2024	$0
IG-12-017, 8/7/2012	Review of NASA's Computer Security Incident Detection and Handling Capability[b]		
Financial Management			
IG-23-001, 10/5/2022	NASA's Compliance with the Geospatial Data Act for Fiscal Year 2022		
	1. The role of the SAOGI is strategically positioned within the Agency to have responsibility, accountability, and authority needed to meet GDA-assigned agency responsibilities.	6/28/2024	$0
	2. Roles and responsibilities of the SAOGI and other key stakeholders are defined in both the Geospatial Data Strategy and its implementation plan.	6/28/2024	$0
	3. The implementation plan for the Geospatial Data Strategy contains detailed action items and milestones, including those for developing a complete and accurate inventory of the Agency's geospatial data.	9/30/2024	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	4. Continued coordination with NARA to establish the appropriate level of scientific data for inclusion in NARA-approved records schedules.	6/28/2024	$0
IG-23-007, 12/19/2022	Fiscal Year 2022 Management Letter[c]		
IG-22-014, 6/28/2022	NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2021		
	3. Complete the OMB data call process for all programs with outlays over $10 million.	5/31/2024	$0
	4. Ensure that program outlays exclude any transactions that do not meet the outlay definition provided by OMB.	5/31/2024	$0
	5. Revise the materiality risk calculation methodology and sampling and estimation methodology plan to include payment transactions only.	5/31/2024	$0
	7. Develop a detailed review process, such as a checklist or job aid, outlining the review procedures performed by the Quality Assurance Division within the reporting process for overpayments from sources other than recapture audits to ensure that the primary reviewer and the supervisory quality control reviewers are performing a thorough review of the aggregated submissions of overpayments. Necessary review steps include ensuring overpayments are not reported twice, capturing issues with overpayments submitted for the incorrect period, and tracking identified and collected portions that occur in different fiscal years for accurate reporting.	5/31/2024	$0

[a] There is no estimated completion date and the OIG and NASA are working on corrective actions to address the recommendation.

[b] This table omits two recommendations from IG-12-017 that NASA determined to be sensitive or classified and therefore unsuitable for release.

[c] This table omits 23 recommendations from IG-23-007 that NASA determined to be sensitive or classified and therefore unsuitable for release.

TABLE 4: AUDITS WITH QUESTIONED COSTS

	Total Questioned Costs	Total Unsupported Costs
A. Management decisions pending from previous reporting period		
No reports	$0	$0
B. Issued during period		
IG-23-015	$49,867,103	$0
Needing management decision during period (A+B)	$49,867,103	$0
Management Decision Made During Period		
Amounts agreed to by management		
IG-23-015	$49,867,103	$0
Amounts not agreed to by management		
N/A	$0	$0
No Management Decision at End of Period		
Less than 6 months old		
No reports	$0	$0
More than 6 months old		
No reports	$0	$0

Notes: Questioned costs (the Inspector General Act of 1978, as amended) are costs 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—an "unsupported cost"; or (3) a finding that the expenditure of funds for the intended purpose is unnecessary or unreasonable.

Management decision (the Inspector General Act of 1978, as amended) 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

There were no audits with recommendations that funds be put to better use for this reporting period. A recommendation that funds be put to better use (the Inspector General Act of 1978 definition) is 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: OTHER MONETARY SAVINGS

For this reporting period there were no audits reporting other monetary savings. These would be savings resulting from actions taken by NASA due to conclusions or information disclosed in an OIG audit report that were not identified as questioned costs or funds to be put to better use in Tables 4 and 5, respectively.

TABLE 7: STATUS OF SINGLE AUDIT FINDINGS AND QUESTIONED COSTS RELATED TO NASA AWARDS

Audits with Findings	17	
Findings and Questioned Costs		
	Number of Findings	Questioned Costs
Management decisions pending from previous reporting period	5	$1,030
Findings added during the reporting period	28	$2,091
Management decisions made during reporting period	(33)	
Agreed to by management		($3,121)
Not agreed to by management		$0
Management decisions pending, end of reporting period	0	$0

Note: The Single Audit Act, as amended, requires federal award recipients to obtain audits of their federal awards. The data in this table is provided by NASA.

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 69 audit reports involving contractors who do business with NASA. Corrective actions taken in response to DCAA audit report recommendations usually result from negotiations between the contractors and the government contracting officer with cognizant responsibility (e.g., the Defense Contract Management Agency and NASA). The agency responsible for administering the contract negotiates recoveries with the contractor after deciding whether to accept or reject the questioned costs and recommendations that funds 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 agreed-upon amounts.

TABLE 8: DCAA AUDIT REPORTS WITH QUESTIONED COSTS AND RECOMMENDATIONS THAT FUNDS BE PUT TO BETTER USE

	Amounts in Issued Reports	Amounts Agreed To
Questioned costs	$14,490,000	$31,282,000
Funds to be put to better use	$0	$0

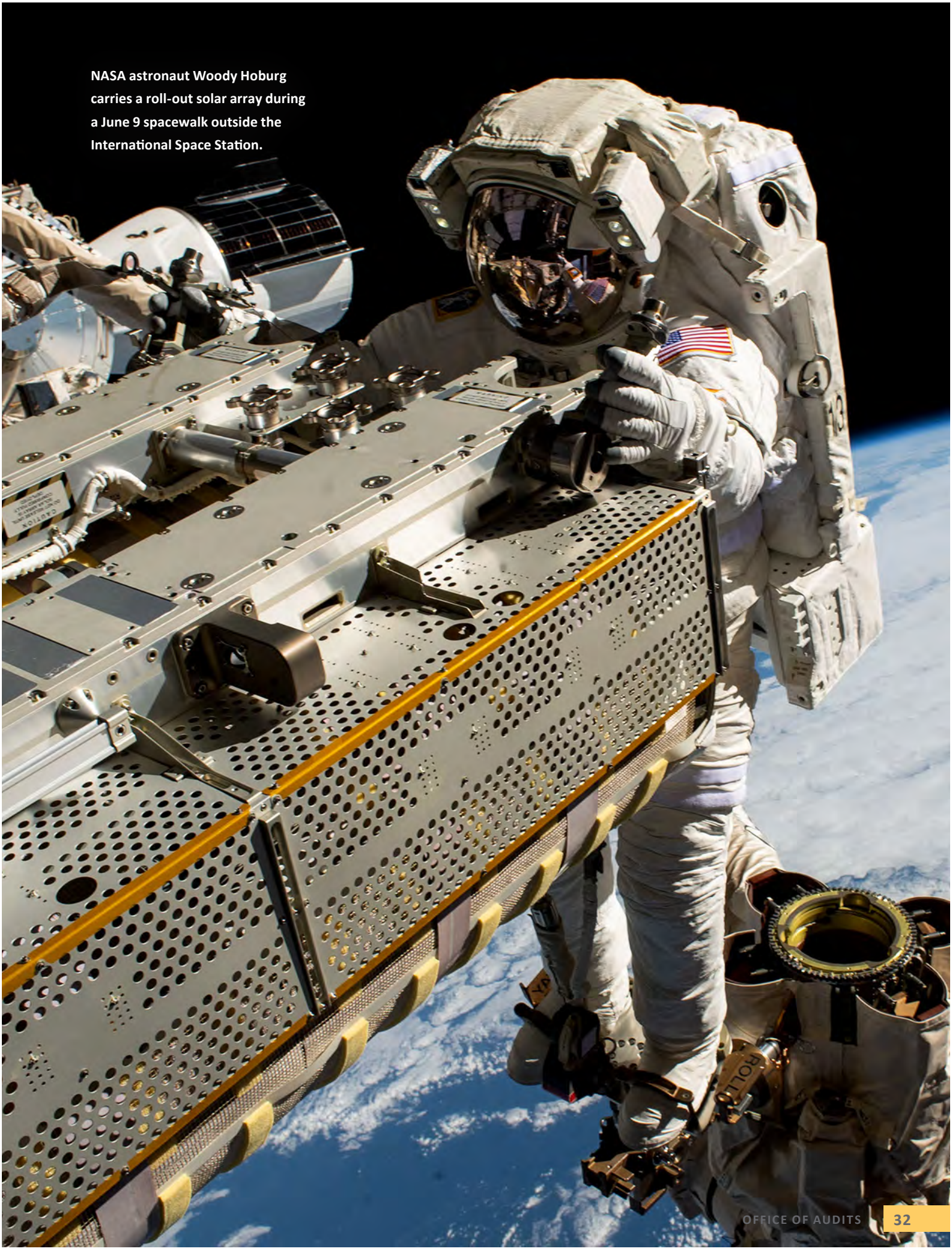
Note: This data is provided to the NASA OIG by DCAA and may include forward pricing proposals, operations, incurred costs, cost accounting standards, and defective pricing audits. Because of limited time between availability of management information system data and legislative reporting requirements, 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.

AUDITS OF NASA CONTRACTORS

NASA contracts with independent public accounting firms and the U.S. Department of the Interior's Interior Business Center to perform a broad range of contract audits on the companies that conduct business with the Agency. The purpose of the audits is to assist procurement officials with financial information and advice relating to contractual matters and to assess the effectiveness, efficiency, and economy of contractor operations. Contract audits also assist NASA in the negotiation, award, administration, and settlement of contracts. During the period covered in this Semiannual Report, independent public accounting firms and the Interior Business Center issued 15 audit reports that involved contractors who do business with NASA. The auditors questioned $576,610 in costs.

TABLE 9: AUDIT REPORTS OF NASA CONTRACTORS WITH QUESTIONED COSTS AND RECOMMENDATIONS THAT FUNDS BE PUT TO BETTER USE

	Amounts in Issued Reports	Amounts Agreed To
Questioned costs	$576,610	$0
Funds to be put to better use	$0	$0



NASA astronaut Woody Hoburg carries a roll-out solar array during a June 9 spacewalk outside the International Space Station.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OFFICE OF INVESTIGATIONS

This view of Earth was captured from a window on the SpaceX Dragon Endurance spacecraft as it approached the International Space Station. Pictured below is the Strait of Gibraltar that connects the Atlantic Ocean to the Mediterranean Sea, which separates the continents of Europe and Africa.

The Office of Investigations investigates fraud, waste, abuse, misconduct, and mismanagement involving NASA personnel and contractors.

PROCUREMENT, ACQUISITION, AND GRANT FRAUD

Former CEO of a Nanotechnology Company Sentenced

The former CEO of a nanotechnology company was sentenced to 48 months of imprisonment and ordered to forfeit $7 million for falsely claiming a partnership with NASA to defraud investors of approximately $10.5 million. This outcome resulted from a joint investigation by the NASA OIG, Federal Bureau of Investigation (FBI), and Securities and Exchange Commission.

Florida Corporation Sentenced

A Florida corporation was sentenced to 60 months of probation, fined $1 million, and ordered to pay $4 million to the General Services Administration (GSA) for fraudulently acquiring multiple government aircraft through GSA's Federal Excess Property Program. The company acquired the aircraft, which included two NASA X-34 unmanned space planes, under the guise of housing them at a fictitious aviation museum. Several of the aircraft were converted for personal use.

Former NASA Contractor Employee and Spouse Debarred

A former NASA contractor employee and his spouse were debarred from federal government contracting for 6 years for steering contracts to a former NASA subcontractor in exchange for monies and gifts. The debarment was the result of a joint investigation by the NASA OIG, FBI, and Internal Revenue Service Criminal Investigation division. The couple, who were sentenced to 20 months and 17 months of imprisonment, respectively, were also sentenced to 36 months of probation upon release and 30 hours of community service. In addition, the couple was ordered to pay $165,472 in restitution, plus $707,331 in asset forfeiture.

Former NASA Contractor Sentenced for Export Violation

A former NASA contractor employee pled guilty to illegally transferring flight control software to a university in the People's Republic of China. As a result, he was sentenced to 20 months of confinement, followed by 3 years of supervised release, and ordered to pay $168,885 in restitution. This was the result of a joint investigation by the NASA OIG, Army Criminal Investigation Division, FBI, Defense Criminal Investigative Service, and Department of Commerce Office of Export Enforcement.

Delaware Company Reimburses NASA for Counterfeit Products

A Delaware company reimbursed $124,819 to NASA for installing high-risk counterfeit network switches, three of which were used to operate the International Space Station. An investigation determined the company was unable to verify the authenticity of the switches after purchasing them from an unauthorized seller.

Contractor Reimburses NASA for Missing Property

As the result of a NASA OIG investigation, a Goddard Space Flight Center contractor reimbursed NASA $21,756 for a missing partial roll of silicon aluminum alloy purchased for the Roman Space Telescope program.

University of Arkansas Professor Debarred

A University of Arkansas professor was debarred for a period of 5 years for making a false

statement to the FBI regarding the existence of patents issued by the People's Republic of China for his inventions. The professor was previously sentenced to 12 months of imprisonment for this action, followed by 12 months of supervised release, and ordered to pay a $5,000 fine.

Company Reimburses NASA for Non-Conforming Parts

As the result of a NASA OIG investigation, a Mississippi company agreed to reimburse NASA $4,673 for non-conforming braided hoses it sold to Stennis Space Center for use on a rocket test stand. According to the company, only a fraction of the hoses was subjected to hydrostatic leak testing, which rendered them unsuitable for the intended use.

Small Business Investigation Results in Multiple 5-Year Debarments

As the result of a joint investigation by the NASA OIG, Army Criminal Investigation Division, Department of Energy OIG, and Homeland Security Investigations, two individuals, a corporation, and a fictitious shell company were debarred from federal government contracting for 5 years for fraudulently obtaining Small Business Innovation Research (SBIR) contracts from multiple government agencies. The shell company in question was proposed as an equity investor to bolster the corporation's chances of being selected.

Former University Professor Debarred for 3 Years

A former Texas A&M University professor was debarred for 3 years for failing to disclose his association with entities in China while receiving NASA grant funds.

Former NASA Contractors Agree to Voluntary Exclusion

The owners of a Titusville, Florida, company agreed to a 3-year voluntary exclusion from federal government contracting after a NASA OIG investigation confirmed the company misrepresented itself as a woman-owned small business for more than a decade. As a result of the scheme, the company was awarded $4.3 million in government contracts.

NASA SBIR Policy Changed

As the result of a NASA OIG investigation into an unauthorized exchange of proprietary information during an SBIR kickoff meeting, the NASA SBIR Program changed its meeting policy to advise companies on how best to protect their information, including controlling attendance and restricting language on Technical Monitor Delegation forms.

COMPUTER CRIMES

Primary Subject in Malware Case Sentenced

As the result of a 10-year joint investigation by the NASA OIG and FBI, the primary subject of the Gozi Trojan malware incident was sentenced to 3 years of imprisonment and ordered to forfeit $3.5 million and pay $18,945 in restitution to NASA.

EMPLOYEE MISCONDUCT

Former NASA Employee Charged with Harassment

As the result of a NASA OIG investigation, a former employee at Marshall Space Flight Center's Child Development Center was charged with harassment for shoving a two-year-old child. The former employee previously made angry statements about the children in her care.

Contractor Employee Indicted for Theft

A Glenn Research Center contractor employee was charged with felony theft and falsification of records for removing approximately one thousand

pounds of insulated copper wire from NASA property and selling it for scrap.

PANDEMIC RELIEF FRAUD

North Carolina Resident Charged with Pandemic Relief Fraud

A North Carolina resident was charged in a scheme for fraudulently submitting applications for Small Business Association (SBA) Economic Injury Disaster Loans and unemployment benefits using fictitious businesses and stolen identities, including the identity of a NASA civil servant. The scheme resulted in the disbursement of approximately $971,568 in pandemic relief funds, $112,000 of which was wrongfully attributed to the NASA civil servant.

West Virginia Business Owner Charged

As the result of an investigation led by the NASA OIG Pandemic Response Accountability Committee Task Force Officer, in conjunction with the United States Secret Service, West Virginia State Police, and West Virginia State Auditor's Office, a West Virginia business owner was charged with theft of government monies after admitting to fraudulently applying for and receiving $451,237 in COVID-19 relief loans.

Contractor Pleads Guilty to COVID-19 Relief Fraud

As the result of a joint investigation by the NASA and SBA OIGs, a former employee of the NASA Jet Propulsion Laboratory pled guilty to committing wire fraud to obtain $151,900 in funding through the SBA Economic Injury Disaster Loan program. The proceeds of the loan were used to repay real estate debt and fund illegal marijuana cultivation.

Former Civil Servant and Company Suspended for Pandemic Relief Fraud

As the result of a NASA OIG investigation, a former civil servant and his company were indefinitely suspended from federal government contracting for fraudulently obtaining over $150,000 in SBA Economic Injury Disaster Loans using NASA information systems.

Former NASA Civil Servant Sentenced for Theft of COVID-19 Relief Funds

A former Kennedy Space Center (KSC) civil servant was charged with felony grand theft and entered into a pretrial diversion agreement for obtaining SBA Payroll Protection Program funds under false pretenses by inflating income and payroll costs for an undisclosed side business. As a result of her actions, the former employee was sentenced to 12 months of supervised release and was ordered to pay $22,592 in restitution to the SBA and $1,657 to NASA.

OTHER CASES

KSC Leadership Implements Physical Security Improvements

In July 2023, KSC leadership concurred with findings from a NASA OIG referral identifying multiple deficiencies in the Center's physical security structure and security processes. The referral stemmed from a months-long investigation of two foreign nationals who breached KSC's perimeter prior to the launch of Artemis I and again before another launch. As a result of the breaches, one subject had his Canadian visa revoked after failing to appear for an interview with Canadian law enforcement authorities, and the other was prevented from reentering the U.S. due to her suspicious behavior at KSC and another incident at the SpaceX facility in Brownsville, Texas.

Florida Resident Indicted After Breaching KSC Perimeter with Loaded Firearm

A Florida resident was indicted by a federal grand jury for leading KSC security personnel on a high-speed chase while in possession of a loaded firearm. The chase continued to Titusville, Florida,

where the individual fled from police and drove her vehicle directly at a police officer before being apprehended.

Florida Resident Sentenced for Felony Narcotics Possession on KSC Property

A Florida resident pled no contest to felony cocaine possession and two other misdemeanors resulting from a routine traffic stop on KSC property. The individual was sentenced to 24 months of house arrest, received a 12-month driver's license suspension, and was ordered to pay a $753 fine.

NASA's James Webb Space Telescope has produced the deepest and sharpest infrared image of the distant universe to date. Known as Webb's First Deep Field, this image of galaxy cluster SMACS 0723 is overflowing with detail.

STATISTICAL DATA

TABLE 10: OFFICE OF INVESTIGATIONS COMPLAINT INTAKE DISPOSITION

Source of Complaint	Zero Files[a]	Administrative Investigations[b]	Management Referrals[c]	Preliminary Investigations[d]	Total
Hotline	6	25	1	27	**59**
All others	21	17	2	51	**91**
Total	**27**	**42**	**3**	**78**	**150**

[a] Zero files are those 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 non-criminal matters initiated by the Office of Investigations as well as hotline complaints referred to the Office of Audits.

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

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

TABLE 11: FULL INVESTIGATIONS OPENED THIS REPORTING PERIOD

Full Criminal/Civil Investigations[a]	34

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

TABLE 12: INVESTIGATIONS CLOSED THIS REPORTING PERIOD

Full, Preliminary, and Administrative Investigations	92

Note: The NASA OIG uses closing memorandums to close investigations. Investigative reports are used for presentation to judicial authorities, when requested.

TABLE 13: CASES PENDING AT END OF REPORTING PERIOD

Preliminary Investigations	58
Full Criminal/Civil Investigations	140
Administrative Investigations	101
Total	**299**

TABLE 14: QUI TAM INVESTIGATIONS

Qui Tam Matters Opened This Reporting Period	1
Qui Tam Matters Pending at End of Reporting Period	12

Note: The number of Qui Tam investigations is a subset of the total number of investigations opened and pending.

TABLE 15: JUDICIAL ACTIONS

Total Cases Referred for Prosecution[a]	43
Individuals Referred to the U.S. Department of Justice[b]	39
Individuals Referred to State and Local Authorities[b]	4
Indictments/Informations[c]	9
Convictions/Plea Bargains	3
Sentencing/Pretrial Diversions	7
Civil Settlements/Judgments	1

[a] This includes all referrals of individuals and entities to judicial authorities.

[b] The number of individuals referred to federal, state, and local authorities are a subset of the total cases referred for prosecution.

[c] This includes indictments/informations on current and prior referrals.

TABLE 16: ADMINISTRATIVE ACTIONS

Referrals	
Referrals to NASA Management for Review and Response	9
Referrals to NASA Management—Information Only	5
Referrals to the Office of Audits	1
Referrals to Security or Other Agencies	1
Total	**16**
Recommendations to NASA Management	
Recommendations for Disciplinary Action	
Involving a NASA Employee	
Involving a Contractor Employee	
Involving a Contractor Firm	2
Other	2
Recommendations on Program Improvements	
Matters of Procedure	
Total	**4**
Administration/Disciplinary Actions Taken	
Against a NASA Employee	1
Against a Contractor Employee	3
Against a Contractor Firm	1
Other	
Procedural Change Implemented	6
Total	**11**
Suspensions or Debarments from Government Contracting	
Involving an Individual	8
Involving a Contractor Firm	5
Total	**13**

TABLE 17: INVESTIGATIVE RECEIVABLES AND RECOVERIES

Judicial	$23,485,226
Administrative[a]	$704,934
Total[b]	$24,190,160
Total NASA	$2,453,277

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

[b] Total amount collected may not solely be returned to NASA but may be distributed to other federal agencies.

TABLE 18: WHISTLEBLOWER INVESTIGATIONS

For the reporting period, no officials were found to have engaged in retaliation.

TABLE 19: SENIOR GOVERNMENT EMPLOYEE INVESTIGATIONS REFERRED FOR PROSECUTION

Case Number	Allegation	Referral Date	Disposition
22-0136-HL-S	Locality Pay and Unemployment Fraud	4/20/2023	Federal and State declined prosecution. Employee retired from federal service.

TABLE 20: SENIOR GOVERNMENT EMPLOYEE CASES NOT DISCLOSED TO THE PUBLIC

Case Number	Allegation	Closure Date	Disposition
23-0034-S	Alleged Ethics Violations	5/11/2023	Unsubstantiated
22-0113-HL-O	Misuse of Travel Funds by Remote Work Employee	5/16/2023	Unsubstantiated
21-0141-S	Inappropriate Issuance of NASA Technology License	8/7/2023	Unsubstantiated


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CONGRESSIONAL TESTIMONY

Shown here is the Milky Way above the La Palma Observatory.
Image Credit: Marcin Rosadziński

PROTECTING THE AMERICAN TAXPAYER: HIGHLIGHTING EFFORTS TO PROTECT AGAINST FEDERAL WASTE, FRAUD, AND MISMANAGEMENT

CT-23-001, APRIL 19, 2023

On April 19, 2023, NASA Inspector General Paul Martin testified before the U.S. House of Representatives Committee on Science, Space, and Technology on efforts to protect against federal waste, fraud, and mismanagement. IG Martin began by stressing the breadth and scale of NASA's work, and the corresponding scale of NASA OIG's oversight, before discussing recurring themes in the OIG's oversight work.

The IG's testimony focused on the top acquisition challenges facing NASA, informed by the OIG's comprehensive audit and investigation work. First, NASA struggles to develop reliable cost and schedule estimates for many of its multi-billion-dollar programs, including the James Webb Space Telescope and the Artemis campaign. For Artemis NASA lacks a comprehensive cost estimate that accounts for all program costs, an omission that contributes to a lack of transparency into the funding required to sustain the program. Through a series of detailed audits, the OIG estimated NASA will spend $93 billion from FY 2012 through FY 2025, a cost the OIG considers unsustainable.

NASA has also struggled over the years to make appropriate contracting decisions. Development contracts, such as those for the Space Launch System's core stages, boosters, and engines and the Orion capsule, were sole-sourced, eliminating potential cost benefits of competition. NASA continues to use a cost-plus contract structure for several Artemis components, even though the programs have experienced significant delays and cost increases. Even fixed-price contracts can be a source of increased costs when requirements evolve, as the OIG found in its audit of the Gateway Program.

Over the years, the OIG has also identified multiple project management decisions that led to increased costs and schedule delays. For the first mobile launcher, these included a lack of coordination with contractors and use of an in-house engineering contractor during the project's main design phase. The OIG identified similar project management issues in our audit of the Orion Program. NASA made decisions to conduct qualification testing after development of Artemis I was completed, when this process is typically completed before the first flight. In addition, the Program began production of additional crew capsules before finishing development of the Artemis I capsule. Both decisions increase the risk of cost growth and schedule delays.

NASA also has a history of paying overly generous award fees inconsistent with contractor performance. For the SLS, Orion, and Mobile Launcher 2, contractors contributed to schedule slips and cost increases but were still given significant award, milestone, and incentive fees. Lastly, procurement and grant fraud are additional causes for concern. Over half the OIG's ongoing investigations (as of March 2023) were related to procurement fraud. Convictions and settlements were related to allegations of inflated labor and indirect costs, fraudulently obtained contracts, improper use of grant funds, and fraudulent transactions resulting in suspect parts supplied to NASA and others.

To its credit, NASA is making progress to improve management of its major programs and projects and address the causes of cost and schedule overruns. These steps range from transitioning to fixed-price contracts and leveraging public-private partnerships to alternative approaches to acquisition. NASA is also taking steps to improve procurement with a strategic workforce plan and realigned functions to ensure better oversight. The OIG will continue to provide robust oversight and share its work to ensure Agency funds are spent effectively and taxpayer dollars are protected from fraud, waste, abuse, and mismanagement.


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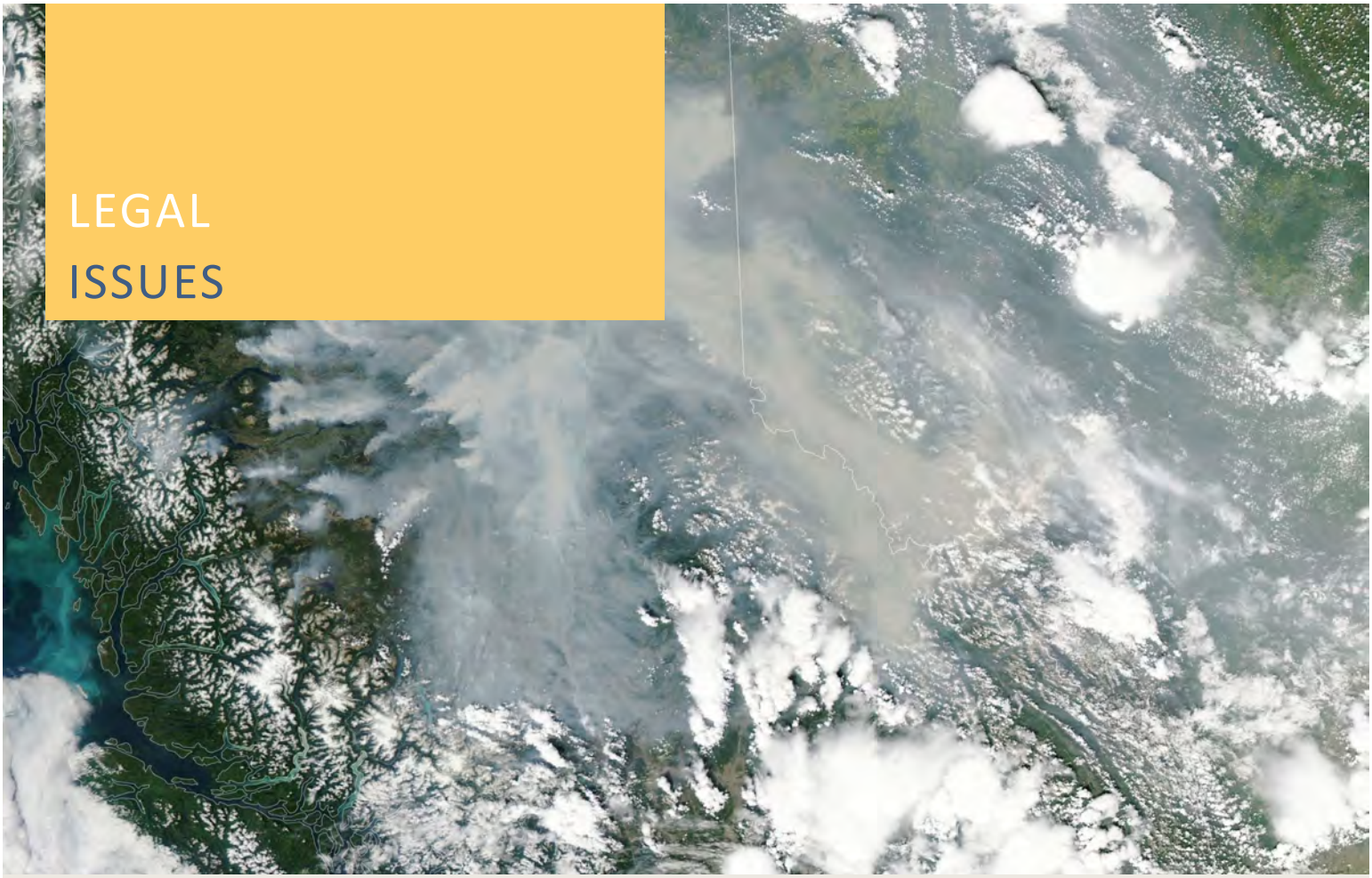
LEGAL ISSUES



NASA's Aqua satellite captured this image on July 12, 2023, of dense plumes of smoke billowing from wildfires in western Canada.

WHISTLEBLOWER PROTECTION

To commemorate this year's Whistleblower Appreciation Day, the OIG sent an email to its employees and posted about the topic on social media. The email and post celebrated whistleblowers who expose crime, fraud, waste, abuse, and mismanagement in government operations. The email included an invitation to OIG employees to attend the Council of the Inspectors General on Integrity and Efficiency's Integrity Committee's Whistleblower Protection Coordinator training on the role of the Integrity Committee in assessing allegations of misconduct by IGs and other senior OIG personnel, and the role of the Whistleblower Protection Coordinator in educating OIG personnel about their rights and protections. Additionally, a Whistleblower Disclosure employee notice was sent to all NASA employees to provide important information about whistleblowers' rights and protections, the Whistleblower Protection Coordinator's contact information, and links to other useful whistleblower information resources.

LEGAL TRAINING

During this six-month period, OIG Legal trained OIG criminal investigators at KSC on the elements of whistleblower retaliation cases. NASA OIG investigates these cases under the authority of 10 U.S. Code 4701. In addition, we presented on recent developments on search and seizure law at an Eastern region off-site meeting in September.

REGULATORY REVIEW

During this reporting period, we reviewed ten NASA regulations and policies under consideration by the Agency. The following are several of the more significant regulations and reviews.

NASA Procedural Requirement (NPR) 8715.5C, *Range Flight Safety Program*

This NPR documents NASA roles, responsibilities, and procedural requirements related to range flight safety. This NPR implements NASA Policy Directive (NPD) 8700.1 regarding the protection of the public, NASA workforce, and property during range operations associated with flight. The updated NPD allows for the delegation of responsibilities to ensure range flight safety of flights that are not completely under the Agency's control. It also clarifies who has authority to make safety determinations, and against which standard, in a variety of situations, such as when there is a NASA payload flying in a non-NASA range or when there are commercial vehicles flying in a NASA range. The OIG recommended changes to the NPR intended to ensure that matters such as safety education, the handling of propellants and explosives, fall protection, flight range safety, and other areas under the broad umbrella of safety and health, which are no longer within the scope of the updated NPR, are still addressed in related directives.

NPD 1600.2F, *NASA Security Policy*

This NPD establishes policy for law enforcement, security, and protection for NASA personnel, including employees, authorized contractors, subcontractors, tenants, and visitors, along with its missions, facilities, property, and information that are in its possession or under its control, consistent with all applicable federal laws, regulations, Executive Orders, and other national-level directives. The directive sets new protective services and responsibilities and programs resulting from NASA's Mission Support Future Architect Program (MAP) and as designated by the NASA Administrator and relevant federal policies. Responsibilities previously held by the Center Directors were moved to the Office of Protective Services. The directive also updates delegations of authorities consistent with the delegations redefined by transformations under MAP. Of note, the directive states that "Nothing in this directive limits the authorities of the Office of Inspector General under the Inspector General Act of 1978, as amended" and gives the OPS Assistant Administrator and the OPS program responsibility for "establishing appropriate relationships with the federal law enforcement community, including the NASA Office of Inspector General." The NASA OIG concurred in the proposed NPD without comments.

NPR 4500.1A, *Administration of Property in the Custody of Award Recipients*

This NPR provides the minimum requirements for planning, approving, monitoring, and reporting of all NASA property in the custody of award recipients of NASA Centers, facilities, and installations. This is a substantial overhaul of the current NPR, with the potential to benefit the NASA OIG mission by increasing control over government property in the custody of NASA contractors, grantees, and other awardees. Changes introduced in this NPR

include industrial property officers participating in source evaluation boards, where it is anticipated that government property will go into awardee custody, to review proposed property management systems, as well as periodic audits of property management systems. The NASA OIG recommended changes to the NPR intended to ensure that NASA sets procedures for handling the loss of government property and determining awardees' responsibility for the loss. Specifically, the OIG recommended that the NPR require contracting officers, grant officers, and government property administrators who suspect that the loss could involve fraud, waste, or abuse to report such activity to the OIG.

NASA Interim Directive (NID) for NPR 1850.1, *Quality Assurance of the NASA Medical Care*

This NID establishes requirements that all NASA flight surgeons responsible for engaging in mission support and care of U.S. astronauts have certain required degrees, licenses, board certifications, and experience. Current NASA flight surgeons who do not meet these requirements may request a waiver. These requirements are not imposed on individuals that are not involved in direct mission-related care of astronauts. The NASA OIG reviewed and concurred with the proposed NID without comments.

STATISTICAL DATA

TABLE 21: LEGAL ACTIVITIES AND REVIEWS

Freedom of Information Act Matters	14
Appeals	0
Inspector General Subpoenas Issued	26
Regulations Reviewed	10

This image taken by Webb's NIRCam (Near-Infrared Camera) shows a part of the Orion Nebula known as the Orion Bar. It is a region where energetic ultraviolet light from the Trapezium Cluster — located off the upper-left corner — interacts with dense molecular clouds. The energy of the stellar radiation is slowly eroding the Orion Bar, and this has a profound effect on the molecules and chemistry in the protoplanetary disks that have formed around newborn stars here.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APPENDIXES

APPENDIX A. INSPECTOR GENERAL ACT REPORTING REQUIREMENTS

Inspector General Act Citation	Requirement Definition	Cross Reference Page Numbers
Section 404(a)(2)	Review of legislation and regulations	48-49
Section 405(b)(1)	Description of significant problems, abuses, and deficiencies relating to the administration of programs and operations of the establishment and associated reports and recommendations for corrective action made by NASA OIG	4-29
Section 405(b)(2)	Identification of each recommendation made before the reporting period for which corrective action has not been completed, including the potential cost savings associated with the recommendation	22-29
Section 405(b)(3)	Summary of significant investigations closed during the reporting period	35-38
Section 405(b)(4)	Identification of the total number of convictions during the reporting period resulting from investigations	40
Sections 405(b)(5)	Information regarding each audit, inspection, or evaluation report issued during the reporting period, including a listing of each audit, inspection, or evaluation, and if applicable, the total dollar value of questioned costs (including a separate category for the dollar value of unsupported costs) and the dollar value of recommendations that funds be put to better use, including whether a management decision had been made by the end of the reporting period	22-31
Section 405(b)(6)	Information on management decisions made during the reporting period with respect to any audit, inspection, or evaluation issued in a previous reporting period	29-30
Section 405(b)(7)	Information described under section 804(b) of the Federal Financial Management Improvement Act of 1996	-
Section 405(b)(8)	Peer review conducted by another OIG	55
Section 405(b)(9)	Outstanding recommendations from peer reviews of NASA OIG	-
Section 405(b)(10)	List of any peer reviews conducted by the Inspector General of another OIG during the reporting period, including a list of any outstanding recommendations made from any previous peer review (including any peer review conducted before the reporting period) that remain outstanding or have not been fully implemented	-
Section 405(b)(11)	Statistical tables showing the total number of investigative reports issued during the reporting period, the total number of persons referred to the Department of Justice for criminal prosecution during the reporting period, the total number of persons referred to state and local prosecuting authorities for criminal prosecution during the reporting period, and the total number of indictments and criminal informations during the reporting period that resulted from any prior referral to prosecuting authorities	40
Section 405(b)(12)	Description of the metrics used for developing the data for the statistical tables	39-41
Section 405(b)(13)(A) and (B)(i)(ii)	Summary of investigations involving senior government employees	41
Section 405(b)(14)	Summary of whistleblower investigations	41
Section 405(b)(15)(A) and (B)	Agency attempts to interfere with OIG independence	-
Section 405(b)(16)(A)	Closed inspections, evaluations, and audits not disclosed to the public	18
Section 405(b)(16)(B)	Closed investigations of senior government employees not disclosed to the public	41

APPENDIX B. AWARDS

The Council of Inspectors General on Integrity and Efficiency recognizes the outstanding accomplishments of OIGs across the federal government. The following NASA OIG teams were honored this year.

Award for Excellence—Audit

Members of the Office of Audits received an Award for Excellence in recognition of exceptional achievement and outstanding teamwork in identifying improvements needed in NASA's management of the Earth Science Disasters Program. The report's findings and recommendations will enable the Program to increase its efficiency and effectiveness at collecting and distributing imagery, data products, and damage assessments to help predict, prepare for, respond to, and recover from disasters.

Award for Excellence—Investigation

Members of the Office of Investigations received an Award for Excellence in recognition of exceptional achievement and outstanding teamwork in the investigation of a 20-year kickback scheme that defrauded NASA and the Internal Revenue Service through $700,000 in bribes in exchange for federal contracts.

APPENDIX C. 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

The Legal Services Corporation OIG completed a peer review of the NASA OIG Office of Audits in December 2021. NASA OIG received a peer review rating of "pass" and has taken all corrective actions to address the recommendations included in the Letter of Comment. We performed an external peer review of the Federal Housing Finance Agency OIG for the 3-year period ending March 31, 2022, and issued our report on September 21, 2022. We also performed an external peer review of the Board of Governors of the Federal Reserve System and Consumer Financial Protection Bureau OIG for the 3-year period ending March 31, 2023, and issued that report on September 18, 2023.

Office of Investigations

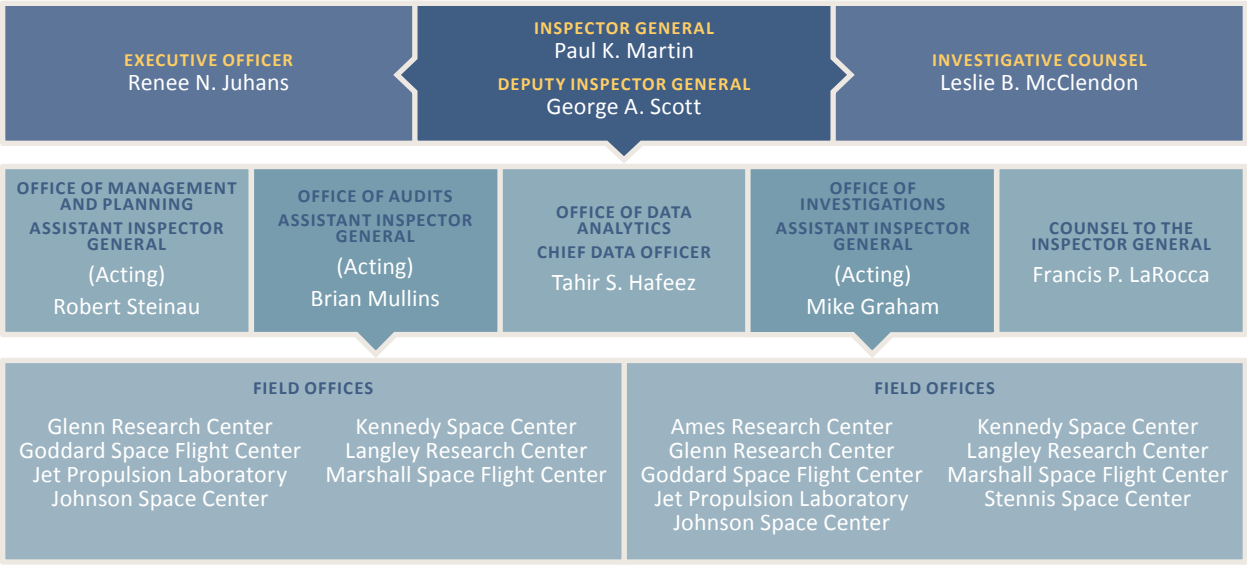
No external peer reviews were performed by the Office of Investigations during this semiannual period. In January 2023, the U.S. Department of Transportation OIG completed its review of the NASA OIG's Office of Investigations and found the office to be compliant with all relevant guidelines. There are no unaddressed recommendations outstanding from this review.

APPENDIX D. ACRONYMS

AI	artificial intelligence
CLPS	Commercial Lunar Payload Services
DCAA	Defense Contract Audit Agency
DSN	Deep Space Network
EAP	Electrified Aircraft Propulsion
EPOC	Exploration Production and Operations Contract
ESSP	Earth System Science Pathfinder
FBI	Federal Bureau of Investigation
FY	fiscal year
GSA	General Services Administration
ISS	International Space Station
IT	information technology
KSC	Kennedy Space Center
MAP	Mission Support Future Architect Program
ML-2	Mobile Launcher 2
MSR	Mars Sample Return
NID	NASA Interim Directive
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
OIG	Office of Inspector General
OMB	Office of Management and Budget
OSAM	On-Orbit Servicing, Assembly, and Manufacturing
PIIA	Payment Integrity Information Act of 2019
SBA	Small Business Administration
SBIR	Small Business Innovation Research
SLS	Space Launch System
STEM	science, technology, engineering, and mathematics

APPENDIX E. OFFICE OF INSPECTOR GENERAL ORGANIZATIONAL CHART

The OIG is currently funded under a continuing resolution at the FY 2023 level of $47.6 million. This budget supports the work of 187 employees in their audit, investigative, and administrative activities.



THE NASA OFFICE OF INSPECTOR GENERAL 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 INSPECTOR GENERAL 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 Inspector General in managing the full range of the OIG's programs and activities and provides supervision to the Assistant Inspectors General, Counsel, and Investigative 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 Investigative Counsel serves as a senior advisor for OIG investigative activities and conducts special reviews of NASA programs and personnel.

THE OFFICE OF AUDITS conducts independent and objective audits and reviews of NASA programs, projects, operations, and contractor activities. In addition, the office oversees the work of independent public accounting firms in conducting NASA's annual information security program evaluation and financial statement audits.

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 office is responsible for educating Agency employees about prohibitions on retaliation for protected disclosures and about rights and remedies for protected whistleblower disclosures.

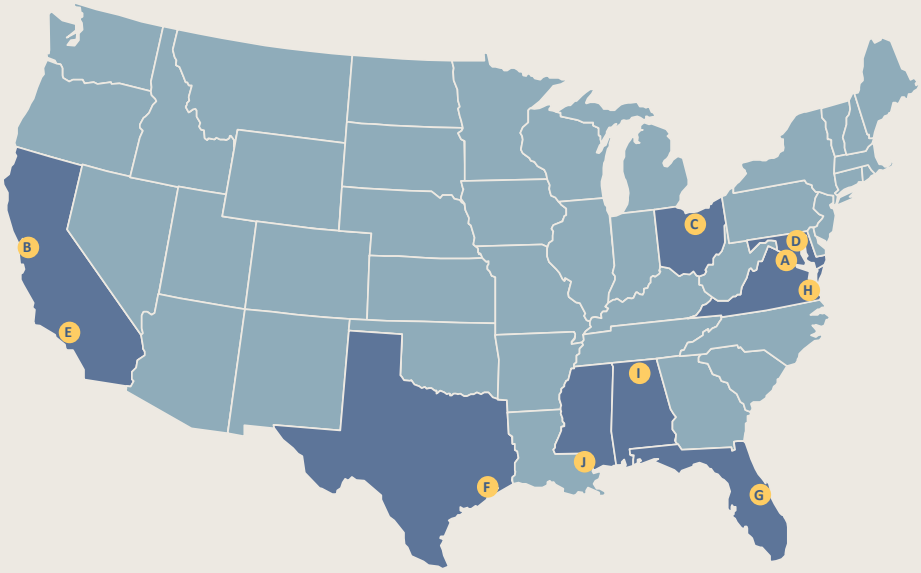
THE OFFICE OF DATA ANALYTICS provides analytic consultation and data services and develops data products to support audits, investigations, and management and planning functions. Composed of statisticians, data scientists, and data engineers, the office also develops a secure data analytic infrastructure that automates processes; secures data in cloud and on-premises environments; and rapidly disseminates critical information to decision-makers to detect and deter fraud, waste, and abuse.

THE OFFICE OF INVESTIGATIONS investigates allegations of cybercrime, fraud, waste, abuse, and misconduct that may affect NASA programs, projects, operations, and resources. The office 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, the office 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 IT services and support to OIG staff.

APPENDIX F. MAP OF OIG FIELD OFFICES

NASA OIG OFFICES OF AUDITS AND INVESTIGATIONS



A NASA OIG HEADQUARTERS
300 E Street SW, Suite 8U71
Washington, DC 20546-0001
Tel: 202-358-1220

B AMES RESEARCH CENTER
NASA Office of Inspector General
Ames Research Center
Mail Stop 11, Building N207
Moffett Field, CA 94035-1000
Tel: 650-604-3682 (Investigations)

C GLENN RESEARCH CENTER
NASA Office of Inspector General
Mail Stop 14-9
Glenn Research Center at Lewis Field
Cleveland, OH 44135-3191
Tel: 216-433-9714 (Audits)
Tel: 216-433-5414 (Investigations)

D GODDARD SPACE FLIGHT CENTER
NASA Office of Inspector General
Code 190
Goddard Space Flight Center
Greenbelt, MD 20771-0001
Tel: 301-286-6443 (Audits)
Tel: 301-286-9316 (Investigations)

NASA Office of Inspector General
Office of Investigations
402 East State Street, Room 3036
Trenton, NJ 08608
Tel: 609-656-2543 or
609-656-2545

E JET PROPULSION LABORATORY
NASA Office of Inspector General
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109-8099

Office of Audits
Mail Stop 180-202
Tel: 818-354-3451

Office of Investigations
Mail Stop 180-203
Tel: 818-354-6630

NASA Office of Inspector General
Office of Investigations
Glenn Anderson Federal Building
501 West Ocean Boulevard, Suite 5120
Long Beach, CA 90802-4222
Tel: 562-951-5485

NASA Office of Inspector General
Office of Investigations
6430 South Fiddlers Green Circle, Suite 350
Greenwood Village, CO 80111
Tel: 303-689-7042

F JOHNSON SPACE CENTER
NASA Office of Inspector General
Johnson Space Center
2101 NASA Parkway
Houston, TX 77058-3696

Office of Audits
Mail Stop W-JS
Building 1, Room 161
Tel: 281-483-9572

Office of Investigations
Mail Stop W-JS2
Building 45, Room 514
Tel: 281-483-8427

G KENNEDY SPACE CENTER
NASA Office of Inspector General
Mail Stop W/KSC-OIG
Post Office Box 21066
Kennedy Space Center, FL 32815
Tel: 321-867-3153 (Audits)
Tel: 321-867-4093 (Investigations)

H LANGLEY RESEARCH CENTER
NASA Office of Inspector General
Langley Research Center
9 East Durand Street
Mail Stop 375
Hampton, VA 23681
Tel: 757-864-8562 (Audits)
Tel: 757-864-3263 (Investigations)

I MARSHALL SPACE FLIGHT CENTER
NASA Office of Inspector General
Mail Stop M-DI
Marshall Space Flight Center, AL
35812-0001
Tel: 256-544-0501 (Audits)
Tel: 256-544-9188 (Investigations)

J STENNIS SPACE CENTER
NASA Office of Inspector General
Office of Investigations
Building 3101, Room 119
Stennis Space Center, MS 39529-6000
Tel: 228-688-1493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OIG Whistleblower Protection Coordinator to learn more about your rights:
https://oig.nasa.gov/whistleblower.html

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Office of Inspector General
National Aeronautics and Space Administration
P.O. Box 23089
L'Enfant Plaza Station
Washington, DC 20026