NASA OFFICE OF INSPECTOR GENERAL

SEMIANNUAL REPORT

OCTOBER 1, 2022–MARCH 31, 2023

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Cover image:
Liftoff! NASA's Space Launch System, carrying the Orion spacecraft, lifts off the pad at Launch Complex 39B at the Agency's Kennedy Space Center in Florida at 1:47 a.m. EST on November 16, 2022.

FROM THE INSPECTOR GENERAL

During this reporting cycle, we issued our annual report identifying the top management and performance challenges facing NASA. This year, we organized the top challenges under the following seven issues:

Challenge 1: Returning Humans to the Moon
Challenge 2: Improving Management of Major Programs and Projects
Challenge 3: Sustaining a Human Presence in Low Earth Orbit
Challenge 4: Managing and Mitigating Cybersecurity Risks
Challenge 5: Improving Oversight of Contracts, Grants, and Cooperative Agreements
Challenge 6: Attracting and Retaining a Diverse and Highly Skilled Workforce
Challenge 7: Managing NASA's Outdated Infrastructure and Facilities

NASA continues at the forefront of aeronautics, science, and space exploration since its creation in 1958. The Agency seeks to continue this legacy with the Artemis campaign, which intends to establish a long-term human presence on the Moon as a prelude to crewed missions to Mars. However, substantial cost growth and lengthy schedule delays continue to impact not only human space flight programs like the Artemis mission's Space Launch System and Orion Multi-Purpose Crew Vehicle, but also other major science and exploratory programs, projects, and missions.

Importantly, these seven challenges are not the only significant issues that confront NASA. Moreover, identification of an issue as a top challenge does not necessarily denote significant deficiencies or lack of attention on the Agency's part. Rather, most of these issues are long-standing, difficult challenges central to NASA's core missions and will likely remain top challenges for years to come. Consequently, they require consistent, focused attention from NASA leadership and ongoing engagement with Congress, the public, and other stakeholders.

For its part, the Office of Inspector General (OIG) is 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 during a very busy period at NASA.

This Semiannual Report summarizes the OIG's activities and accomplishments between October 1, 2022, and March 31, 2023. We hope you find it informative.

Paul K. Martin
Inspector General
April 28, 2023

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NASA
AERONAUTICS AND SPACE ADMINISTRATION

NASA'S TOP MANAGEMENT AND PERFORMANCE CHALLENGES

In this image taken on October 30, 2021, an aurora dimly intersects with Earth's airglow as the International Space Station flies into an orbital sunrise 264 miles above the Pacific Ocean before crossing over Canada.

As required by the Reports Consolidation Act of 2000, the OIG annually provides its independent assessment of the top management and performance challenges facing NASA. In our November 2022 report, we organized the challenges facing NASA under the following topics:

- Returning Humans to the Moon
- Improving Management of Major Programs and Projects
- Sustaining a Human Presence in Low Earth Orbit
- Managing and Mitigating Cybersecurity Risks
- Improving Oversight of Contracts, Grants, and Cooperative Agreements
- Attracting and Retaining a Diverse and Highly Skilled Workforce
- Managing NASA's Outdated Infrastructure and Facilities

This year's list includes many of the same challenges discussed in previous reports. However, we did not include the challenge related to COVID-19 that was added to the November 2021 report because of the strides made in treating the disease and NASA's actions to address the issue.

In our Top Management and Performance Challenges report and all related work, the OIG is committed to providing independent, objective, and comprehensive oversight of NASA programs, projects, and personnel to improve Agency outcomes. To that end, we plan to conduct audits and investigations in the coming year that focus on NASA's continuing efforts to address these and other challenges.

OFFICE OF AUDITS

The luminous, hot star Wolf-Rayet 124 is prominent at the center of the James Webb Space Telescope's composite image combining near-infrared and mid-infrared wavelengths of light from Webb's Near-Infrared Camera and Mid-Infrared Instrument.

HUMAN EXPLORATION

Space operations and human exploration are 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 PARTNERSHIPS WITH INTERNATIONAL SPACE AGENCIES FOR THE ARTEMIS CAMPAIGN

IG-23-004, JANUARY 17, 2023

While NASA is leading the Artemis campaign, international partnerships will play a key role in achieving a sustainable and robust presence on the Moon throughout this decade while also preparing to travel to Mars. To this end, since 2020 NASA and almost two dozen partner countries have signed the Artemis Accords, establishing a practical set of principles to guide space exploration cooperation among nations participating in NASA's 21st-century lunar exploration plans. This audit examined NASA's efforts to partner with international space agencies for Artemis missions. We found that interest in the Artemis campaign is high across the international space community, as seen with NASA's 54 Artemis-related international instruments and the 23 signatories to the Accords. However, the Agency lacks an overarching strategy to coordinate international partner contributions to Artemis; an overall architecture for lunar exploration that clarifies potential Artemis international partner funding, roles, and responsibilities; and an overall cooperative framework that addresses the legal structure,

Logos from NASA and the European Space Agency are installed on Orion's crew module adapter ahead of the Artemis I mission.

program development, or partner roles and responsibilities due to bilaterally pursuing Artemis agreements. Further, we found that the complexity and restrictive nature of U.S. export control regulations of defense articles and commercial items and their implementation in international agreements, policies, and how space flight systems are classified routinely limit NASA's Artemis collaborations. While NASA's international partners provide a capability to contribute to the Agency's exploration costs, the Agency needs to effectively incorporate international partner cost management strategies,

such as fixed-price contracts, to achieve its Artemis objectives. Of our 10 recommendations, the Agency concurred with all but one.

REVIEW OF NASA'S SPACE TECHNOLOGY MISSION DIRECTORATE PORTFOLIO
IG-23-005, DECEMBER 19, 2022

NASA's Space Technology Mission Directorate (STMD) invests in transformational technologies that may offset future mission risks, reduce costs, advance capabilities that enable Agency missions, support growth in the commercial space economy, and ensure American global leadership in space technology. STMD managed more than 9,000 projects from 2012 to 2021 and, in fiscal year (FY) 2022 alone, managed nearly 2,500 projects with a budget of $1.1 billion. This audit examined the extent to which NASA's management of its STMD portfolio aligns with space technology needs and whether performance measures and outcomes reflect the directorate's goals.

The Laser Communication Relay Demonstration is part of STMD's portfolio.

We found that STMD established a framework to identify and prioritize technology gaps within the directorate's portfolio. However, the directorate does not have a reliable way to evaluate how its expenditures align with those gaps. In addition, while STMD generally met its annual performance goals, the directorate needs to develop more outcome-based measures to capture the extent to which its funded technologies help achieve STMD's strategic objective to innovate and advance transformational space technologies. The Agency concurred with our three recommendations.

One of the Space Launch System's two solid rocket boosters fired up at liftoff during the Artemis I launch on November 16, 2022.

ONGOING AUDIT WORK

NASA's Management of the Space Launch System Booster and Engine Contracts

Key to NASA's Artemis campaign is 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 will examine NASA's management of its SLS booster and engine contracts.

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

Consisting of multiple programs and projects; more than a dozen prime contractors; and thousands of subcontractors, vendors, and suppliers, Artemis is an ambitious and costly effort that seeks to return humans to the Moon and later 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.

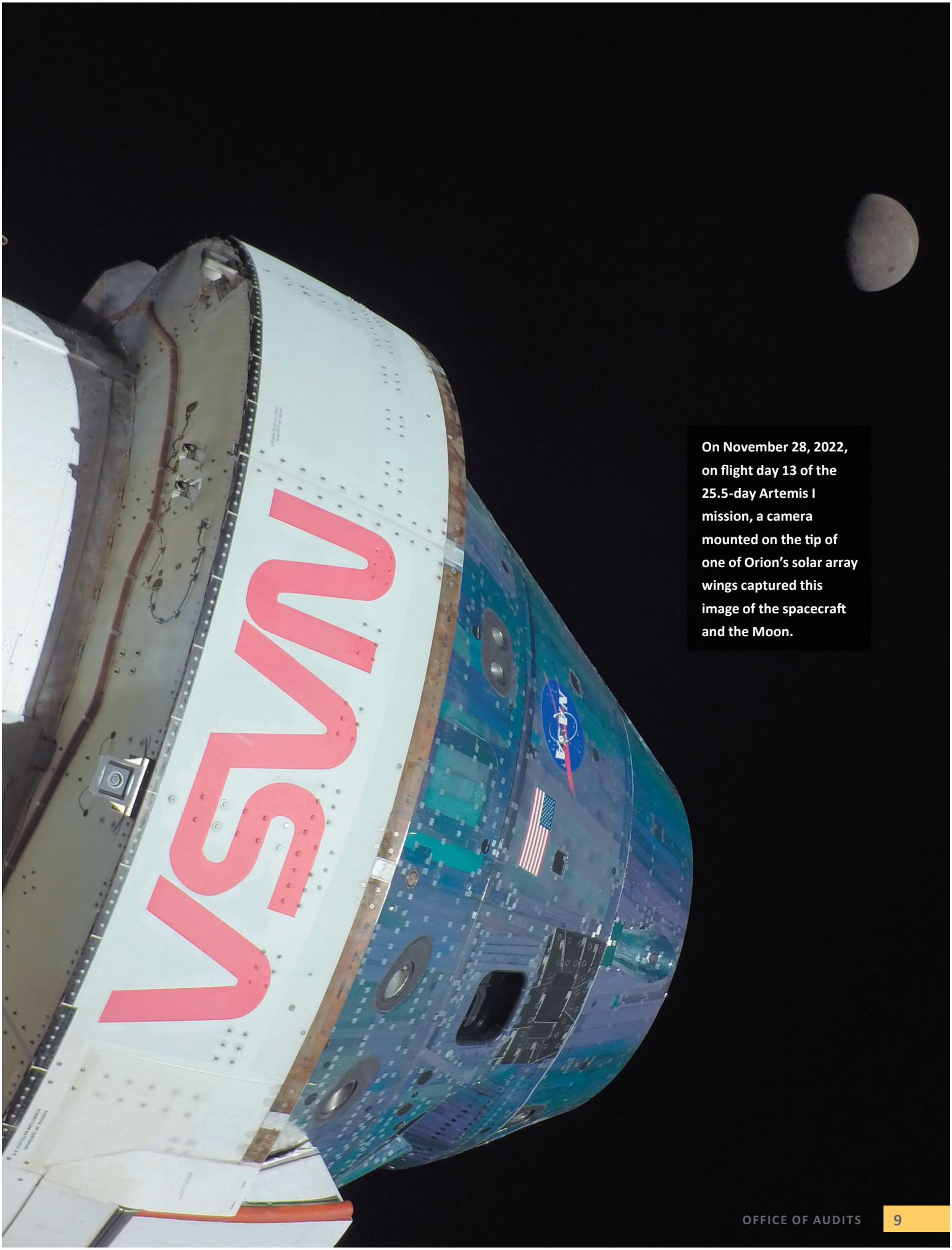
NASA's Readiness for Its Artemis II Crewed Mission to Lunar Orbit

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.

NASA's Management of Artemis IV and Future Missions

Beginning with Artemis IV, development, integration, and operation of NASA's space flight systems will become more complex and expensive. To achieve its objectives for Artemis IV alone, NASA must (1) complete development of the SLS Block 1B rocket, including the Exploration Upper Stage, a more powerful version of the upper stage currently used on the SLS; (2) complete development of the Mobile Launcher 2; (3) stage the Gateway platform in lunar orbit so the Artemis IV crew can connect the International Habitat flying on the SLS as a 10-metric-ton co-manifested payload; and (4) conduct a lunar landing using SpaceX's Human Landing System. In its effort to reduce the per-flight price of the $2.2 billion SLS, the Agency has decided to commercialize SLS production and operations and hopes to award a sole-source contract to a Boeing–Northrop Grumman joint effort in 2023. This audit will examine NASA's management of space flight activities for its Artemis IV and future missions.

The crew of NASA's Artemis II mission (left to right): NASA astronauts Christina Hammock Koch, Reid Wiseman (seated), and Victor Glover; and Canadian Space Agency astronaut Jeremy Hansen.



On November 28, 2022, on flight day 13 of the 25.5-day Artemis I mission, a camera mounted on the tip of one of Orion's solar array wings captured this image of the spacecraft and the Moon.

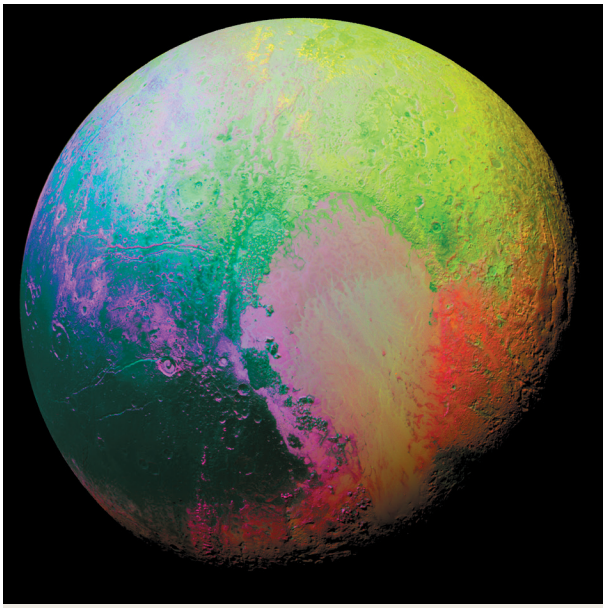
SCIENCE AND AERONAUTICS

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 MANAGEMENT OF ITS RADIOISOTOPE POWER SYSTEMS PROGRAM

IG-23-010, MARCH 20, 2023

NASA has long used nuclear power system technology—generally plutonium-238 (Pu-238)–based radioisotope power systems (RPS)—for deep space missions such as Voyager, New Horizons, and Perseverance, where solar power or chemical batteries would be impractical. This audit assessed the RPS Program, specifically evaluating management of Pu-238 production rates, the status of current technology development, and the Program's effectiveness in supporting NASA science missions. We found that the RPS Program has not produced a viable new RPS technology since the Program began in 2010 and that NASA lacks a clear resource allocation strategy to ensure completion of new technology developments, both negatively impacting the Program's objective to enable and enhance science outcomes. Additionally, the RPS Program faces communication challenges with the U.S. Department of Energy—which is responsible for manufacturing and supplying Pu-238—as it lacks transparency into Energy's Pu-238 production process, limiting the ability to accurately assess the availability of Pu-238 for NASA missions. Internally at NASA, lack of coordination between directorates for nuclear power development activities limits opportunities for leveraging technical advancements, potential co-development cost efficiencies, and knowledge sharing. Of our nine recommendations, the Agency concurred with eight and partially concurred with one.



New Horizons scientists made this false-color image of Pluto to highlight the many subtle color differences between Pluto's distinct regions.

ONGOING AUDIT WORK

NASA's Electrified Aircraft Propulsion Research and Development Efforts

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 hybrid-electric propulsion systems for single-aisle commercial transport aircraft. This audit will assess the progress of NASA's electrified aircraft propulsion research and development efforts.

Pictured here is NASA's X-57 Maxwell, the Agency's experimental all-electric aircraft.

NASA's Earth System Science Pathfinder Program

Climate change continues to turbocharge severe storms, wildfires, hurricanes, droughts, and floods, which threaten hundreds of millions of people. NASA's Earth System Science Pathfinder Program—composed of small, relatively inexpensive missions—seeks to examine Earth's changing climate by leveraging competitively selected Earth science research opportunities that accommodate new and emerging scientific priorities and measurement capabilities. This audit will evaluate NASA's management of the Earth System Science Pathfinder Program, assessing the Program's ability to meet goals, control costs while meeting milestones, and address science and climate research priorities.

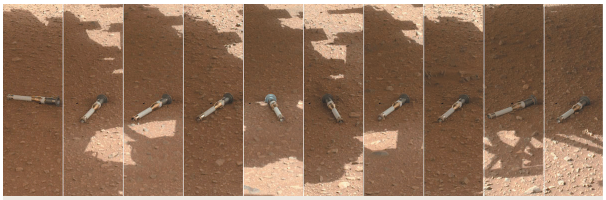
OCO-2 and OCO-3 are missions under the Earth System Science Pathfinder Program.

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

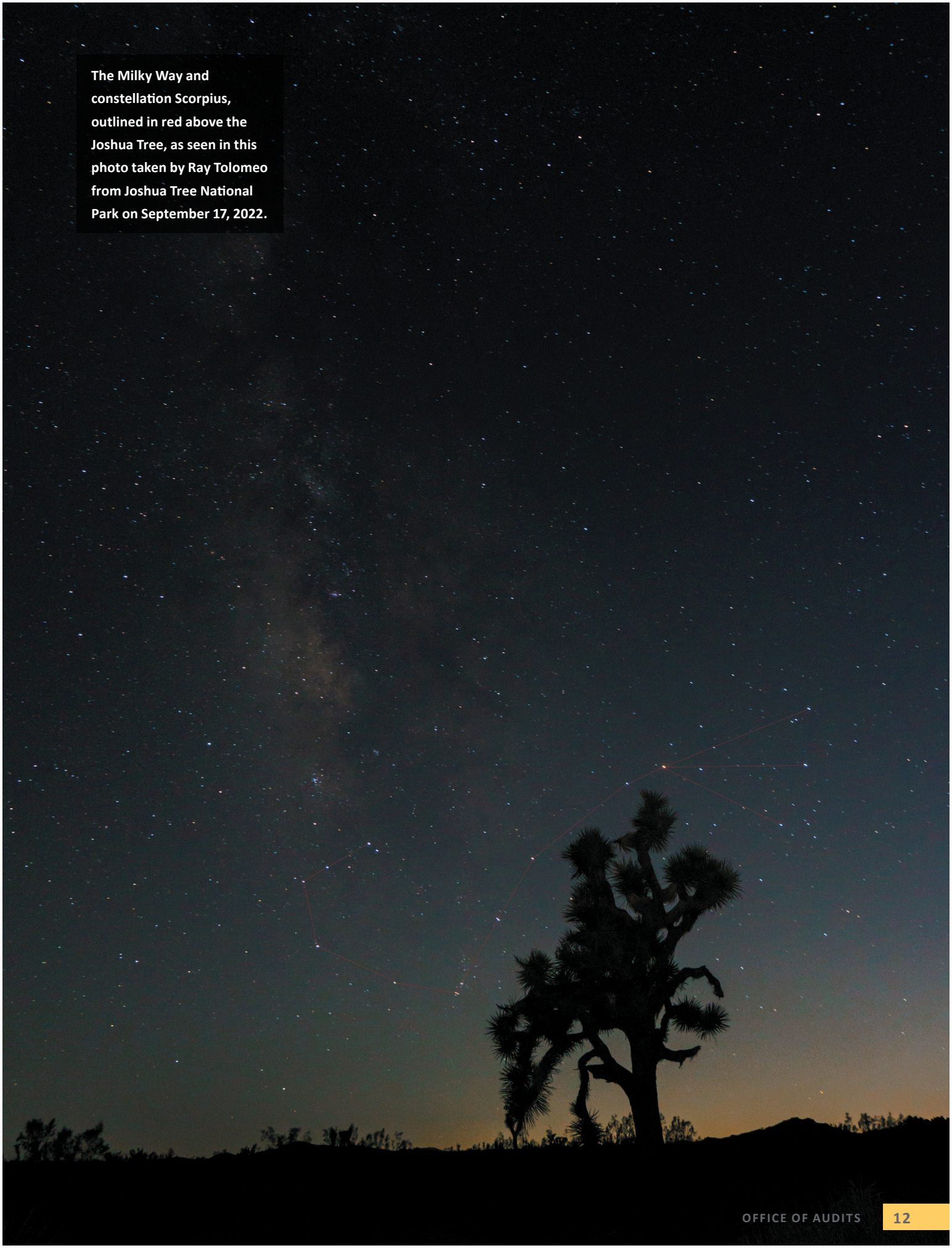
NASA's On-orbit Servicing, Assembly, and Manufacturing-1 mission intends to demonstrate first-of-its-kind technology by grappling a U.S. government–owned satellite, Landsat 7, and refueling it, thereby demonstrating the capability of extending the operational life of satellites on orbit. This audit will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

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 return 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. Unprecedented in its technical and managerial requirements, this audit will assess the MSR Program relative to its cost, schedule, and technological objectives.



This photomontage shows each of the sample tubes shortly after they were deposited onto the surface by NASA's Mars Perseverance rover.



The Milky Way and constellation Scorpius, outlined in red above the Joshua Tree, as seen in this photo taken by Ray Tolomeo from Joshua Tree National Park on September 17, 2022.

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 COMPLIANCE WITH FEDERAL EXPORT CONTROL LAWS

IG-23-009, FEBRUARY 6, 2023

The OIG is required to annually assess the Agency's compliance with federal export control laws and reporting requirements regarding cooperative agreements between NASA and China or any Chinese company. Since we last reported on these issues, NASA has not established any new bilateral agreements with China.

Flight Directors Paul Konyha and Nicole McElroy monitor the Orion spacecraft as it reaches its record-breaking distance from Earth, nearly 270,000 miles, on flight day 14 of the Artemis I mission. Flight control personnel at the Mission Control Center use computers to help monitor all aspects of a mission.

In a February 2023 letter to Congress, we summarized our work relating to NASA's compliance with federal export control laws. During the past year, we completed two audits that examined NASA's controls over sensitive information and IT assets and security systems, many of which contain data subject to export control laws. In addition, our Office of Investigations closed three investigations related to inappropriate associations with China and the misuse of and unauthorized access to NASA computer systems and export-controlled information. We also initiated three new audits related to IT security.

NASA'S SOFTWARE ASSET MANAGEMENT

IG-23-008, JANUARY 12, 2023

More than 49,000 desktop, laptop, and engineering computers carrying thousands of unique software products from hundreds of vendors enable NASA scientists and engineers to drive advances in science, technology, aeronautics, Earth studies, and human and space exploration. This audit examined whether NASA is managing its software assets in an effective and efficient manner while complying with security best practices.

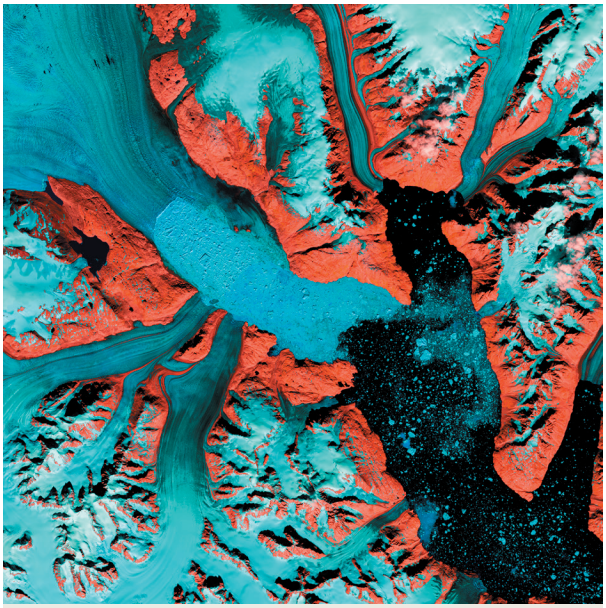
We found that NASA's efforts to implement an enterprise-wide Software Asset Management program have been challenged by budget and staffing issues as well as the complexity and volume of its software licensing agreements. Instead, NASA continues to use a decentralized and ad hoc approach to Software Asset Management that presents numerous risks, adds to costs, and is likely unsustainable. Consequently, NASA software assets are not well monitored and the Agency does not know whether its software licenses are under- or over-subscribed, resulting in significant unidentified liabilities or underutilized assets as well as millions of dollars owed to software vendors. We identified $35 million in questioned costs related to unnecessary penalties and payments to vendors as well as $4 million in funds that could be put to better use related to savings if enterprise-wide Software Asset Management tools are operational. Of our nine recommendations, the Agency concurred with seven and partially concurred with two.

NASA FEDERAL INFORMATION SECURITY MODERNIZATION ACT OF 2014 EVALUATION REPORT FOR FISCAL YEAR 2022
IG-23-006, DECEMBER 19, 2022

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, and they reported in December 2022 that NASA's cybersecurity program was at a Level 3 (Consistently Implemented), which means policies, procedures, and strategies were consistently implemented, but quantitative and qualitative effectiveness measures were lacking. This rating fell short of a Level 4 rating (Managed and Measurable), which OMB requires federal cybersecurity programs to meet to be considered effective.

NASA'S COMPLIANCE WITH THE GEOSPATIAL DATA ACT FOR FISCAL YEAR 2022
IG-23-001, OCTOBER 5, 2022

The Geospatial Data Act of 2018 (GDA) seeks to foster efficient, government-wide management of geospatial data—information identifying the geographic location and characteristics of natural or constructed features and boundaries on Earth.



Example of a geospatial data visualization. This Landsat 9 image of Greenland's Kangerdlugssuaq Glacier shows ice and snow in light blue; water in dark blue; and barren, rocky land in red. Satellite images like these show loss of ice sheets over time to help project future sea-level rise.

The Act requires Inspectors General to audit the collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data by covered agencies, including NASA, at least once every 2 years. This audit evaluated the extent to which NASA is managing its geospatial data in accordance with the Act and the Agency's implementation of recommendations made in our previous October 2020 GDA memorandum.

The GDA establishes 13 responsibilities that each covered agency is required to implement to manage its geospatial data. While NASA has made significant progress toward fully implementing these responsibilities since our first audit in 2020, we found deficiencies impacting 6 of the 13 responsibilities during FY 2022, including that NASA has not completed an implementation plan for its geospatial data strategy, fully defined Agency officials' roles and responsibilities for geospatial data management, or established a complete and accurate inventory of its geospatial data. Additionally, challenges persist with developing National Archives and Records Administration–approved records schedules for NASA's geospatial data. The Agency concurred with our four recommendations.

ONGOING AUDIT WORK

NASA's Efforts to Increase Diversity in Its Workforce

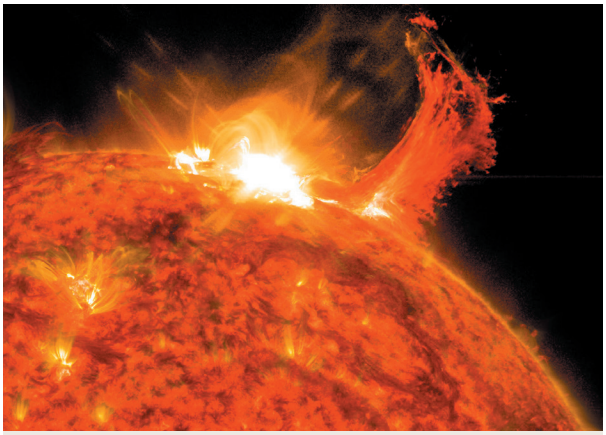
Much of NASA's success—as a world leader in aeronautics, space exploration, science, and technology, as well as being voted the best place to work in the federal government for the past 11 years—relies on attracting and retaining a highly skilled and diverse workforce. Federal agencies are required to work towards removing barriers to employment, services, and successful progression into leadership positions. To this end, NASA established inclusion as one of its core values and, like all federal agencies, is working to meet federal requirements to promote diversity, equity, inclusion, and accessibility. This audit will evaluate the Agency's efforts to increase diversity in its workforce.

NASA's Management of the Deep Space Network

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 they collect. Much of the DSN's infrastructure, some of which was 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 will assess NASA's progress toward upgrading the DSN and the ability of the network to support current and future mission requirements.

NASA's Management of Its Artificial Intelligence Capabilities

Artificial intelligence—the capability of a machine to imitate intelligent human behavior—is utilized by NASA in a number of applications, including on experiments in low Earth orbit to conduct weather modeling and in deeper space to map terrain hazards for future landing sites. This audit will review NASA's progress in developing its artificial intelligence governance frameworks and policies and will assess whether security controls have been implemented to protect artificial intelligence data and technologies.



A new computer model combines artificial intelligence and NASA satellite data to predict where solar storms will strike on Earth with 30 minutes' warning to reduce impacts on power grids and other critical infrastructure.

Evaluation of NASA's Information Security Program Under the Federal Information Security Modernization Act for Fiscal Year 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 OMB. We are overseeing the FY 2023 evaluation conducted by the independent public accounting firm RMA Associates, LLC.

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 workforce with varied technical and management 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.

Through the Student Launch initiative, middle school, high school, college, and university students across the nation design, build, launch, and fly payloads and vehicle components that support NASA research on high-power rockets.

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 implementation and management of 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 SpaceX Crew Dragon, the Japanese H-II Transfer Vehicle-9 resupply ship, and Europe's Columbus laboratory module figure prominently in this photograph taken during a spacewalk with astronauts Bob Behnken and Chris Cassidy. All three are attached to the U.S. Harmony module with the International Docking Adapter on top.

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.

FISCAL YEAR 2022 REPORT ON STATUS OF CHARGE CARD AUDIT RECOMMENDATIONS
ML-23-004, JANUARY 30, 2023

The Government Charge Card Abuse Prevention Act of 2012, Public Law 112-194, as implemented by OMB Memorandum M-13-21, requires each Inspector General to report to OMB within 120 days of the end of each fiscal year on its agency's progress in implementing charge card–related audit recommendations. We did not issue any reports on NASA's charge card programs in FY 2022 and therefore had no recommendations to report; as of the issuance of our memorandum, NASA had no open recommendations related to its charge card programs.

AUDIT OF NASA'S FISCAL YEAR 2022 FINANCIAL STATEMENTS
IG-23-003, NOVEMBER 15, 2022

We contracted with the independent public accounting firm Ernst & Young LLP to audit NASA's FY 2022 financial statements in accordance with the Government Accountability Office's *Government Auditing Standards* and OMB Bulletin No. 22-01, *Audit Requirements for Federal Financial Statements*. The audit resulted in the 12th consecutive "clean" or unmodified opinion on NASA's financial statements. An unmodified opinion means the financial statements present fairly, in all material respects, the financial position and results of NASA's operations in conformity with U.S. generally accepted accounting principles. Ernst & Young LLP found no material weaknesses or significant deficiencies in internal controls or any instances of significant noncompliance with applicable laws and regulations. Further, they closed the previously reported significant deficiency related to NASA's evaluation of public-private partnerships for disclosure in the financial statements.

ONGOING AUDIT WORK

NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2022

Improper payments are payments the federal government should not have made or made in an incorrect amount under statutory, contractual, administrative, or other legally applicable requirements. This audit will examine whether NASA complied with the requirements of the Payment Integrity Information Act in FY 2022.

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.

NASA astronaut Jessica Meir is submerged in NASA's 6.2-million-gallon Neutral Buoyancy Laboratory for spacewalk training.

STATISTICAL DATA

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

Report No. and Date Issued	Report Title	Objective
ML-23-005, 3/29/2023	Quality Control Review of the National Institute of Aerospace Associates' Fiscal Year 2021 Single Audit Reporting Package	Determined whether the audit report and supporting workpapers met generally accepted government auditing standards and the Uniform Guidance audit requirements.
IG-23-007, 12/19/2022	Fiscal Year 2022 Management Letter	Identified improvements in the effectiveness of the controls over financial reporting and the IT control environment.
ML-23-002, 11/16/2022	Desk Review of the National Space Grant Foundation, Inc.'s Fiscal Year 2020 Single Audit Reporting Package	Determined whether the audit report met generally accepted government auditing standards and the Uniform Guidance audit requirements.
ML-23-003, 11/7/2022	Desk Review of the SETI Institute'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.
ML-23-001, 10/19/2022	Desk Review of the Southeastern Universities Research Association, 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-23-004, 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
	3. Issue a detailed strategy and mission architecture for beyond Artemis IV that considers potential international partner roles and responsibilities.	3/31/2023	$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.	6/30/2023	$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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	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
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
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
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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	2. Implement a single Software Asset Management tool across the Agency.	10/1/2027	$39,000,000
	3. Align the Agency Software Manager position to report to the Agency CIO.	8/1/2023	$0
	4. Establish formal legal representation and guidance for vendor software audits.	6/30/2023	$0
	5. Establish a software license awareness training "short course" focusing on approvals, compliance, and other issues a general user might encounter.	10/2/2023	$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
	8. Implement a "penalty spend" classification in SAP to track license infractions and true-up payouts.	1/31/2023	$0
	9. Centralize software spending insights to include purchase cards.	9/29/2023	$0
IG-23-006, 12/19/2022	NASA Federal Information Security Modernization Act of 2014 Evaluation Report for Fiscal Year 2022		
	1. Implement the necessary entity-wide oversight to monitor RISCS for delinquent ATOs and SARs and ensure the information system owners of the systems selected for testing in this evaluation complete delinquent ATOs and SARs so RISCS provides sufficient information to determine NASA's risk exposure.	11/17/2023	$0
	2. Design and implement the necessary entity-wide oversight, enforcement mechanisms, and controls to ensure all system-level BIAs are accurate and reviewed annually, as well as ensure the information system owners of the systems selected for testing in this evaluation complete a system-level BIA.	11/17/2023	$0
	3. Review all information systems to determine if a BIA has been performed in accordance with NASA's Information Technology Security Handbook (ITS-HBK), *Contingency Planning* (ITS-HBK-2810.08-01A).	11/17/2023	$0
	4. Implement the necessary entity-wide oversight to monitor RISCS for accuracy and completeness, including reviewing portfolio-wide reports or dashboards demonstrating compliance with Federal requirements and enhancing decision-making.	11/17/2023	$0
	5. Design and implement the necessary entity-wide oversight enforcement mechanisms and ensure the information system owner of the system selected for testing during this evaluation performs a system inventory of its software assets and licenses to ensure all software and license information are accurate and reviewed annually.	11/17/2023	$0
	6. Develop policies, procedures, and processes to manage the cybersecurity risks of risk framing, risk response, and risk monitoring in accordance with NASA policy.	11/17/2023	$0
	7. Document the NMI process in NASA's ISCM Strategy to ensure its hardware inventory monitoring process is accurate, complete, and fully aligned with NASA's other continuous monitoring guidance.	11/17/2023	$0
	8. Develop a policy and implement the necessary entity-wide oversight to monitor risk through a risk register and a risk profile to provide enterprise-wide metrics to inform top management of its IT risks.	11/17/2023	$0
	9. Implement the necessary oversight to monitor POA&Ms and RBDs in RISCS to identify ones that require action so it can ensure that the ISOs take the necessary 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.	11/17/2023	$0
	10. Ensure that the system owners of the systems selected for testing in this evaluation address its past due POA&Ms and unapproved RBDs.	11/17/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	11. Ensure that the system owner of the system selected for testing in this evaluation addresses its unapproved RBD.	11/17/2023	$0
	12. Incorporate supplier risk evaluations into continuous monitoring practices outlined in NASA's ISCM Strategy.	11/17/2023	$0
	13. Increase its resources and effort to enforce MFA using a NASA Identify based account and token from Agency ICAM service offerings (i.e., NASA PIV, Agency Smart Badge) for all moderate and high information systems in NASA's environment to comply with NASA, NIST, and OMB's guidelines.	11/17/2023	$0
	14. Ensure the information system owner of the system selected for testing during this year's evaluation implements PIV or Phishing Resistant MFA for its non-privileged users to comply with NASA, NIST, and OMB's guidelines.	11/17/2023	$0
	15. Ensure the security controls for protecting PII and other Agency-sensitive data throughout the data lifecycle found in control families PM, PT, and SR are updated and defined within the Agency's ISCM strategy.	11/17/2023	$0
	16. Establish and implement policies and procedures to periodically update its cybersecurity workforce assessment.	11/17/2023	$0
	17. Revise ISCM policies to document and implement lessons learned based on risk events whereby employees are instructed to record, analyze, and revise control activities to improve NASA's security posture.	11/17/2023	$0
IG-23-001, 10/5/2022	NASA's Compliance with the Geospatial Data Act for Fiscal Year 2022		
	1. Ensure the role of the SAOGI is strategically positioned within the Agency to have responsibility, accountability, and authority needed to meet GDA-assigned Agency responsibilities.	6/30/2023	$0
	2. Ensure roles and responsibilities of the SAOGI and other key stakeholders are defined in both the Geospatial Data Strategy and its implementation plan.	6/30/2023	$0
	3. Ensure 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
	4. Ensure continued coordination with NARA to establish the appropriate level of scientific data for inclusion in NARA-approved records schedules.	9/29/2023	$0
Financial Management			
IG-23-007, 12/19/2022	Fiscal Year 2022 Management Letter[b]		

[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 23 recommendations from IG-23-007 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-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.	12/31/2022	$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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	3a. Ensure an Independent Government Cost Estimate is established before entering into any new contractual agreements.	9/30/2023	$0
	3b. Ensure the Critical Design Review has been completed in accordance with NASA's life-cycle policies prior to conversion.	9/30/2023	$0
	4. Ensure acquisition officials minimize the availability of award fees when contract modifications and value increases are the result of shortcomings in contractor performance and require documentation of the rationale for any award fees granted.	11/30/2022	$2,939,667
	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-22-011, 4/7/2022	NASA's Cost Estimating and Reporting Practices for Multi-Mission Programs		
	1. Estimate, track, and report ongoing production costs for all major programs, such as SLS and Orion, as development costs (Phases C & D) and not as Operations and Sustainment (Phase E) costs.	unresolved[a]	$0
	2. Include in the next MPAR to Congress the estimated baseline life-cycle cost and schedule for each Artemis mission (starting no later than Artemis III) for which NASA proposes to expend funds in the subsequent fiscal year.	unresolved[a]	$0
	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 with a cost estimate, outside of the MPAR, for each Artemis mission currently planned, starting no later than Artemis III.	2/28/2023	$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
	5. Establish procedural requirements to ensure compliance with the Title 51 requirement to report full life-cycle cost and schedule for all major programs should NASA elect to estimate, track, and report baseline costs for major programs or activities that exceed $250 million by component rather than by mission.	unresolved[a]	$0
	6. Review NPR 7120.5F and update it as necessary to ensure compliance with laws and regulations and recommendations 1 through 5. Ensure the use and definitions of terms, such as "capability" and "life cycle," are consistent with those established in federal statutes and other NASA procedural requirements and policy directives.	unresolved[a]	$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-22-007, 1/11/2022	NASA's Management of Its Astronaut Corps		
	1. Further centralize and maintain its collection, summary, and monitoring of detailed astronaut data—to include skills, certifications, training, and demographics—to better support the sizing and alignment of the astronaut corps and to help inform recruiting and training of astronauts to fulfill NASA's strategic goals, including continuing to expand the diversity of the astronaut corps.	7/31/2023	$0
	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.	2/1/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
IG-22-005, 11/30/2021	NASA's Management of the International Space Station and Efforts to Commercialize Low Earth Orbit		
	1. 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.	5/31/2022	$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.	4/30/2023	$0
	2. Expand upon the existing draft Artemis IMS to include Artemis programs outside AES and ESD to properly align dependencies across directorates.	5/31/2023	$0
	3. Develop an Artemis-wide cost estimate, in accordance with best practices, that is updated on an annual basis.	9/30/2022	$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.	3/31/2023	$0
	7. Identify measurable cost reduction targets for its ESD contractors.	12/31/2022	$0
IG-21-025, 8/10/2021	NASA's Development of Next-Generation Spacesuits		
	1. To the extent that the schedule for Artemis III is extended beyond 2024, adjust the xEVA System schedule as appropriate to reduce development risks. For example, this could include (a) ensuring that at least the first two xEMU flight suits can also be used for ISS priorities, (b) reducing the risk of concurrency in development of xEMU testing and qualification suits, and/or (c) baselining the xEVA system schedule and ensuring the schedule incorporates margin and factors in the high likelihood of unrealized schedule risks.	1/31/2023	$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-21-004, 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.	3/1/2023	$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.	3/31/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
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 4 and 5 to better align with the successful demonstration of Artemis 2 to reduce schedule delays associated with potential rework.	3/31/2023	$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 the Human Exploration and Operations Mission Directorate and other senior Agency officials.	3/31/2023	$0
	4. Require the ML-2 project to develop an ABC separate from the EGS Program.	3/31/2023	$0
IG-20-012, 3/10/2020	NASA's Management of Space Launch System Program Costs and Contracts		
	2. 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.	3/31/2023	$0
	2b. Establish methodologies and processes to track and set cost commitments for Artemis II.	4/29/2022	$0
	2c. Determine 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).	3/31/2023	$0
IG-20-005, 11/14/2019	NASA's Management of Crew Transportation to the International Space Station		
	1. 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-22-017, 9/29/2022	NASA's Management of Its Johns Hopkins University Applied Physics Laboratory Portfolio		
	1. Document this occurrence—NASA paying more than required on IDIQ contracts and task orders—as a lessons learned, as well as provide supplemental guidance to NASA procurement officials that, in the absence of prohibitive regulation or direction, the FAR provides them the authority to take the lead in encouraging business process innovations to ensure efficient contract actions.	6/30/2023	$3,876,979
	2. Document a process to periodically assess and compare the total cost estimate for awarded APL tasks to the established maximum and take timely action to modify the contract or request a deviation from the FAR to exclude a maximum for ARDES II and any future ARDES-type IDIQ contracts for APL.	6/30/2023	$0
IG-22-013, 6/14/2022	NASA's Management of the Earth Science Disasters Program		

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	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.	1/20/2023	$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.	2/13/2023	$0
	3. In accordance with the Stafford Act, coordinate with appropriate NASA offices to develop Memorandums of Understanding that facilitate reimbursement agreements with applicable federal agencies that request Agency support for disaster events.	5/1/2023	$0
	4. Require ESDP, in coordination with ASP leadership, to finalize the NASA Disasters Program Playbook and complete associated annexes and appendixes.	12/1/2022	$0
	5. Ensure ESDP provides regular training to Center disaster coordinators regarding the Playbook and expectations of application.	2/1/2023	$0
	6. Require the ESDP Program Manager to develop a formalized plan to capture knowledge and increase the frequency of conducting after-action activities as appropriate.	3/1/2023	$0
	7. Require the ESDP Program Manager to develop a system to track lessons learned recommendations resulting from after-action assessments to ensure the recommendations are implemented and routinely evaluated for effectiveness.	1/20/2023	$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.	12/31/2022	$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.	3/31/2023	$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-20-023, 9/16/2020	NASA'S Planetary Science Portfolio		
	2. Engage relevant Centers and technical capability leaders to implement budgetary and accounting system options to support critical discipline capabilities.	7/30/2023	$0
IG-19-019, 5/29/2019	Management of NASA's Europa Mission		
	9. 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.	11/12/2021	$0
IG-18-015, 4/5/2018	NASA's Management of GISS: the Goddard Institute for Space Studies		
	8. To the extent practicable, implement GAO's best practices for establishing partnerships, including the formalization of agreements that outline the roles and responsibilities of each agency in the performance and application of climate research.	9/30/2022	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
Mission Support and Information Technology			
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.	12/31/2022	$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.	9/30/2023	$0
	6. Ensure FRED and Center organizations' management such as the PSO, OCFO, and Facilities Engineering and Real Property Management Division are involved in the entire lease process from initial planning through termination to identify and assess resources, budgets, schedules, risks, and compliance with federal and NASA requirements.	9/30/2023	$0
	7. Establish a formal management structure for implementing the NASA Ames Development Plan that includes a documented and transparent process and emphasizes continuous internal and external stakeholder coordination for the research and development campus.	9/30/2023	$0
	8. Establish a documented process with defined performance metrics to objectively measure progress and success for the research and development campus program, including evaluating tenant and partner contributions to NASA missions and monitoring and reporting the performance metrics at least annually.	9/30/2023	$0
	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 resources 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-21-027, 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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	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. 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-21-019, 5/18/2021	NASA's Cybersecurity Readiness		
	2. Collaborate with the Chief Engineer on strategies to strengthen EA across mission and institutional IT boundaries.	7/29/2023	$0
	3. Determine the optimal organizational placement of the Enterprise Architect and Enterprise Security Architect.	7/29/2023	$0
	4. Determine the total annual cost of A&A for NASA's 526 systems, account for annual A&A costs at each Center, and set a baseline for what a typical A&A should cost.	6/30/2023	$0
	5. Develop and include requirements in the planned consolidated cybersecurity contract (CyPrESS) for a dedicated enterprise A&A functional team to be provisioned to mission and institutional systems as required by the A&A life cycle.	6/30/2023	$0
IG-21-006, 12/3/2020	NASA's Management of Hazardous Materials		
	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.	12/31/2022	$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-21-002, 10/27/2020	NASA's Management of Its Acquisition Workforce		
	1. Finalize and fully implement the Performance Metrics Dashboard to measure acquisition performance.	12/1/2023	$0
	2. Document contract assignments to COs, CORs, and program/project managers in a centralized system for inclusion in the Performance Metrics Dashboard.	12/1/2022	$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-20-011, 3/3/2020	NASA's Management of Distributed Active Archive Centers		
	1. 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-20-001, 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

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	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-19-014, 3/26/2019	NASA's Engineering and Technical Services Contracts		
	1. Develop an Agency-wide standardized set of metrics for contracts that can be collected, tracked, and analyzed over time to identify efficiencies resulting from a change in contract structure	4/28/2023	$0
	2. Require Center Procurement Offices to formally collect, track, and report data to the Headquarters Office of Procurement on these metrics at least annually.	4/28/2023	$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 policies and procedures for using the proceeds from facilities leased under NHPA authority appropriately align with Agency goals to minimize excess facilities.	8/30/2023	$0
IG-12-017, 8/7/2012	Review of NASA's Computer Security Incident Detection and Handling Capability[b]		
Financial Management			
IG-22-016, 9/28/2022	Vulnerability Assessment and Penetration Testing Report for the Fiscal Year 2022 Financial Statement Audit[c]		
IG-22-014, 6/28/2022	NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2021		
	1. Complete steps outlined in OMB guidance for when an agency is not compliant with PIIA for one fiscal year. Non-compliant agencies must provide information describing the actions that the agency will take to become compliant in the OMB annual data call, including (a) measurable milestones to be accomplished to achieve compliance (i.e., report the SLS testing results in the FY 2022 OMB data call), (b) designation of a senior agency official who will be accountable for the progress to become compliant, and (c) establishment of an accountability mechanism with appropriate incentives and consequences tied to the success of the senior agency official in leading NASA's efforts to achieve compliance.	12/30/2022	$0
	2. Report disaster relief funding as a separate program from the Institutional Construction of Facilities program when satisfying payment integrity reporting requirements.	12/31/2022	$0
	3. Complete the OMB data call process for all programs with outlays over $10 million.	12/30/2022	$0
	4. Ensure that program outlays exclude any transactions that do not meet the outlay definition provided by OMB.	12/30/2022	$0
	5. Revise the materiality risk calculation methodology and sampling and estimation methodology plan to include payment transactions only.	12/30/2022	$0
	6. Consider adhering to OMB's $10 million threshold for program selection for the annual risk assessment.	5/31/2023	$0

Report No. and Date Issued	Report Title and Recommendations	Estimated Completion Date	Potential Cost Savings
	7. Develop a detailed review process, such as a checklist or job aid, outlining the review procedures performed by the QAD within the reporting process for overpayments from sources other than recapture audits to ensure the primary reviewer and 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.	5/31/2023	$0
	8. Determine the specific programs that had overpayments identified and collected during the reporting period and report those amounts by the Agency program as requested by OMB. If NASA deems this effort not cost-effective, the Agency should document its determination and report overpayments by Treasury Account Fund Symbol or another more meaningful method than by the Center or office that responded to QAD's inquiries for overpayments.	10/31/2023	$0
IG-20-016, 5/15/2020	NASA's Compliance with the Improper Payments Information Act for Fiscal Year 2019		
	2. In accordance with OMB guidance, obtain a statistically valid estimate of the annual amount of improper payments in the SLS Program for reporting in the FY 2020 AFR, and complete the associated required reporting.	6/30/2023	$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 10 recommendations from IG-22-016 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-23-008	$35,000,000	$0
Needing management decision during period (A + B)	$35,000,000	$0
Management Decision Made During Period		
Amounts agreed to by management		
IG-23-008	$35,000,000	$0
Amounts not agreed to by management		
No reports	$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

	Funds to Be Put to Better Use
A. Management decisions pending from previous reporting period	
No reports	$0
B. Issued during period	
IG-23-008	$4,000,000
Needing management decision during period (A + B)	$4,000,000
Management Decision Made During Period	
Amounts agreed to by management	
IG-23-008	$4,000,000
Amounts not agreed to by management	
No reports	$0
No Management Decision at End of Period	
Less than 6 months old	
No reports	$0
More than 6 months old	
No reports	$0

Note: 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	6	
Findings and Questioned Costs		
	Number of Findings	Questioned Costs
Management decisions pending from previous reporting period	10	$309,709
Findings added during reporting period	12	$0
Management decisions made during reporting period	(17)	
Agreed to by management		($308,679)
Not agreed to by management		$0
Management decisions pending, end of reporting period	5	$1,030

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 21 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	$1,494,000	$3,923,000
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 23 audit reports that involved contractors who do business with NASA. The auditors questioned about $1.9 million in costs.

In line with this effort, the OIG procured two incurred cost audits and one agreed-upon procedure engagement for NASA contractors and subcontractors who were not included in the Agency's audit procurement plan. We utilized NASA's preestablished Agency-wide audit support services contract with certified public accounting firms. These audits were intended to identify potential gaps and risks in audit coverage of NASA prime and subcontract costs. Based on the established memorandums of agreement and statements of work, the objective of the incurred cost audits was to examine the costs claimed on NASA contracts and to express an opinion as to whether the costs are allowable under the Federal Acquisition Regulation and Cost Accounting Standards (if applicable), reasonable, applicable to the contract, and not prohibited by statute or regulation. The agreed-upon procedures engagement was conducted to review and provide analysis over billing practices and the joint venture agreement terms of one NASA contractor.

For the incurred cost audits, the auditors questioned $47,939 in direct subcontract costs and the associated indirect costs because documentation was not provided for subcontractor travel and labor costs. For the agreed-upon procedures engagement, the auditors conducted five major procedures reviewing the organizational structure, billing practices, and vouchers of an unpopulated joint venture, made up of three small businesses, under its contract with NASA. Going forward, we plan to procure additional audits and engagements and report systemic issues.

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	$1,906,977	$0
Funds to be put to better use	$0	$0

OFFICE OF INVESTIGATIONS

NASA's Orion spacecraft for the Artemis I mission was successfully recovered inside the well deck of the USS Portland on December 11, 2022, off the coast of Baja California, Mexico.

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

PROCUREMENT, ACQUISITION, AND GRANT FRAUD

Former Executive and Parent Company Agree to Voluntary Exclusion

The former chief executive officer of a Titusville, Florida, engineering firm and the firm's parent company agreed to a 3-year voluntary exclusion from federal contracting after the chief executive officer and three other employees were convicted of conspiracy, wire fraud, and misprision of felony for engaging in a 22-year fraud scheme against the government. The firm, misrepresenting itself as a woman-owned small business, received more than $84 million in contract payments to complete work at Kennedy Space Center. The former chief executive officer, parent company, and two other employees were previously debarred from federal government contracting.

Contractor Agrees to Civil Settlement

As the result of a joint investigation by the NASA OIG and Defense Criminal Investigative Service, a Florida company agreed to a civil settlement of $7,759,694 to resolve allegations that it fraudulently obtained contracts from NASA and other federal agencies by making false claims related to its small and disadvantaged business status.

3D Printing Company Agrees to a Civil Settlement

The U.S. Attorney's Office for the Northern District of Texas reached a civil settlement with a Texas 3D printing company that agreed to pay the United States up to $4.54 million to resolve allegations that it violated the False Claims Act by improperly transmitting export-controlled NASA and U.S. Department of Defense technical data to a company in China. The potential full settlement amount includes $2.27 million in restitution and an additional $2.27 million in penalties should the company fail to pay the same amount to the U.S. Department of State and U.S. Department of Commerce in connection with a parallel administrative settlement.

Contractor Agrees to Settle False Claims Allegations

As the result of a joint investigation by the NASA OIG, Air Force Office of Special Investigations, and Defense Criminal Investigative Service, a Colorado laser manufacturer agreed to a civil settlement of $402,621 to settle allegations that it collaborated with foreign entities for research and development consulting services without government approval.

Contractor Pleads Guilty to Major Fraud

A Florida company pleaded guilty to major fraud against the United States following the previous arrest and indictment of its director for fraudulently obtaining a Department of Defense aircraft and two NASA X-34 unmanned space planes for personal use through the General Services Administration Federal Excess Property Program.

University Agrees to Civil Settlement

As the result of a joint investigation by the NASA OIG, Federal Bureau of Investigation, U.S. Army Criminal Investigation Division, and National Science Foundation OIG, an Ohio university agreed to a civil settlement of $875,689 to resolve allegations that it failed to disclose a professor's affiliations with and support from a foreign government in connection with research funding from NASA and other federal agencies.

EMPLOYEE MISCONDUCT

Former Civil Servant Sentenced for Pandemic Relief Fraud

A former Johnson Space Center civil servant pleaded guilty to engaging in a scheme to secure over $150,000 in Paycheck Protection Program funding by claiming to own a fictitious business. As a result, they were sentenced to 60 months of probation and ordered to pay $156,400 in restitution.

Former Civil Servant Charged with Felony Grand Theft of COVID-19 Relief Funds

A former Kennedy Space Center civil servant was charged by the Florida State Attorney's Office with felony grand theft for fraudulently securing $20,832 in Paycheck Protection Program funding by inflating costs related to a side business they failed to disclose on their Confidential Financial Disclosure Report.

Senior NASA Official Reprimanded

A senior Goddard Space Flight Center employee received a letter of reprimand for integrity violations after creating the appearance that they attempted to direct NASA funding to a contractor with whom they had a personal business relationship.

Senior Contract Official Counseled for Alleged Assault

A senior Goddard Space Flight Center contractor employee received written counseling for their role in an alleged assault against another employee at the Goddard Child Development Center.

Contractor Terminated for Theft

A Goddard Space Flight Center contractor employee was terminated for theft of government property valued at $1,300, which was later recovered.

Two Senior Contractors Terminated

As the result of a joint investigation by the NASA OIG, Federal Bureau of Investigation, and Internal Revenue Service–Criminal Investigation, two senior contractor employees were terminated for receiving government property and gifts from another contractor in exchange for insider information used to obtain NASA contracts.

OTHER CASES

Former Florida Police Officer Sentenced

A former Florida police officer was sentenced to 2 years of probation and 100 hours of community service after pleading no contest to felony Unauthorized Computer Access for their role in assisting an ex-wife to frame her ex-husband—a NASA civil servant—for making terroristic threats against her. The investigation found the former police officer misused official computer systems and engaged in other misconduct while on duty. The ex-wife of the civil servant previously pled guilty and was sentenced in federal court to 6 months of imprisonment for her role in the conspiracy.

Mars is about twice as large as our Moon, but the Moon was only 245,000 miles away—compared to Mars, the red dot seen to the bottom right of the Moon, which was about 51 million miles away—in this photo taken by Ray Tolomeo on December 7, 2022, from Bristow, Virginia.

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	1	5	1	10	**17**
All others	22	27	4	37	**90**
Total	**23**	**32**	**5**	**47**	**107**

[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]	21

[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	83

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	41
Full Criminal/Civil Investigations	135
Administrative Investigations	94
Total	**270**

TABLE 14: QUI TAM INVESTIGATIONS

Qui Tam Matters Opened This Reporting Period	3
Qui Tam Matters Pending at End of Reporting Period	13

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]	28
Individuals Referred to the U.S. Department of Justice[b]	21
Individuals Referred to State and Local Authorities[b]	7
Indictments/Informations[c]	4
Convictions/Plea Bargains	2
Sentencing/Pretrial Diversions	3
Civil Settlements/Judgments	3

[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	7
Referrals to NASA Management—Information Only	4
Referrals to the Office of Audits	1
Referrals to Security or Other Agencies	5
Total	**17**
Recommendations to NASA Management	
Recommendations for Disciplinary Action	
Involving a NASA Employee	1
Involving a Contractor Employee	4
Involving a Contractor Firm	2
Other	-
Recommendations on Program Improvements	
Matters of Procedure	-
Total	**7**
Administration/Disciplinary Actions Taken	
Against a NASA Employee	2
Against a Contractor Employee	7
Against a Contractor Firm	1
Other	4
Procedural Change Implemented	3
Total	**17**
Suspensions or Debarments from Government Contracting	
Involving an Individual	-
Involving a Contractor Firm	-
Total	-

TABLE 17: INVESTIGATIVE RECEIVABLES AND RECOVERIES

Judicial	$5,975,239
Administrative[a]	$1,300
Total[b]	**$5,976,539**
Total NASA	**$491,905**

[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.

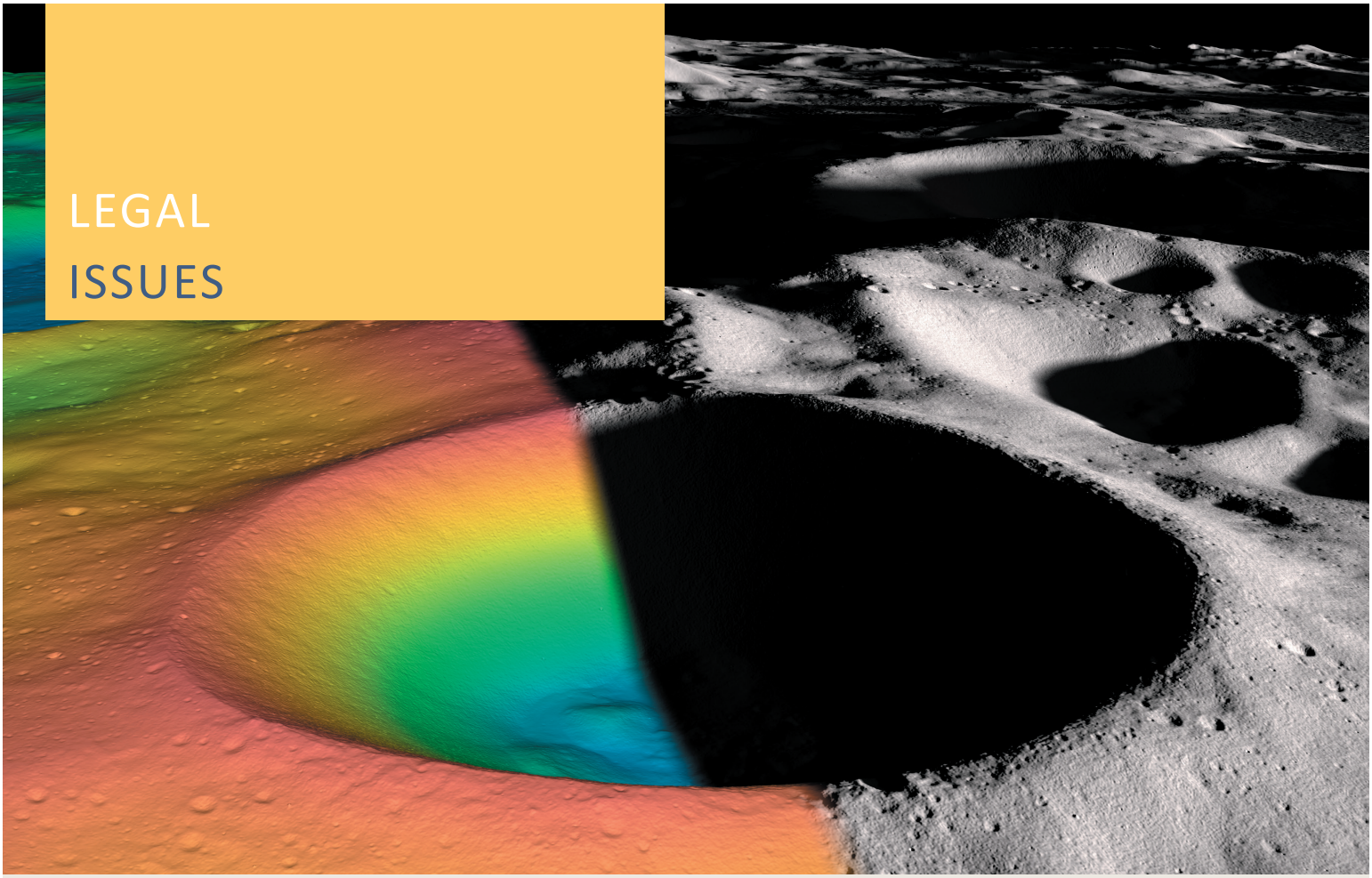
TABLE 19: SENIOR GOVERNMENT EMPLOYEE INVESTIGATIONS REFERRED FOR PROSECUTION

Case Number	Allegation	Referral Date	Disposition
18-0289-O	False Statements—Background Investigation	12/1/2022	Prosecution—1 year of probation and a $9,500 fine.

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

Case Number	Allegation	Closure Date	Disposition
19-0151-HL-O	Procurement Irregularities	12/7/2022	Employee retired.
20-0277-S	Using Public Office for Private Gain	3/13/2023	Written reprimand.

LEGAL ISSUES



A visualization of Shackleton crater. The near (Earth-facing) side of the Moon is to the right. In the false-color elevation on the left, red is higher and blue is lower.

ETHICS, FRAUD AWARENESS, AND TRAINING

OIG legal staff integrated our employees' outside activities request form into the NASA automated system to process ethics requests. The form is used to process approvals of outside activities of OIG employees and to make sure there are no conflicts of interest between the outside activity and the employee's official duties. Further, NASA is now on its 3-year cycle for live fraud awareness training for its contracting staff. Legal staff updated the OIG's whistleblower protection information for this training module. In addition, the Western Regional Counsel conducted training in March 2023 to Computer Crimes Division personnel on advice of rights during investigations, including Miranda, Garrity, and Kalkines warnings and Weingarten rights.

REGULATORY REVIEW

During this reporting period, we reviewed 6 NASA regulations and policies under consideration by the Agency. The following are several of the more significant regulations and reviews.

NASA Procedural Requirements (NPR) 7100 (Draft 48), *Curation of Astromaterials*

NPR 7100 establishes NASA's requirements and procedures for acquiring, curating, and maintaining institutional scientific collections of NASA-held astromaterials. This NPR addresses issues related to the management of astromaterials such as budgeting, accessibility plans, accessioning/deaccessioning of collections, frequency of collection reviews, management of collections including quality control, documentation and accountability plans, and legal and ethical issues. The requirements described in this NPR are used to develop Mission Directorate and NASA Center management processes. The OIG recommended changes to the NPR intended to ensure that it incorporates a process or procedure for addressing suspected lost or stolen astromaterials.

NASA Policy Directive (NPD) 1920.1A, *Scientific and Research Integrity*

NPD 1920.1A establishes requirements and standards for scientific and technical integrity. The directive creates the new roles of Agency Research Integrity Officer and Center Research Integrity Officer to handle allegations of research misconduct; increases the tempo of internal review (from every 3 years to annually) and NPD updates (from no established schedule to every 2 years); and creates an affirmative obligation to develop and publish a NASA reference handbook on scientific integrity. The OIG recommended changes to the directive intended to provide clear guidance on the ethics requirements applicable to proposal reviewers who serve as subject matter experts that have no formal relationship with NASA, and on available recourse if they fail to adhere to these requirements. The OIG also recommended that the NPD direct Center

Research Integrity Officers to report alleged research and/or scientific misconduct to the OIG and assist OIG inquiries and investigations as needed. This recommendation is intended to avoid deviation from the federal regulations related to the OIG's role in the handling of suspected research misconduct (14 C.F.R. § 1275.102-105).

NPR 3335.1J, *Merit Promotion and Placement*

NPR 3335.1J provides the procedural requirements for NASA's Merit Promotion and Placement plan that supports the competitive and non-competitive placement of individuals based on job-related criteria. The plan supplements the requirements set forth by statute and 5 C.F.R. Parts 330 and 335 and establishes minimum Agency procedures for filling positions with current or former federal employees with competitive status at or below the GS-15 level based on merit. Of note is the preface of the NPR, which details the OIG's statutory independence and authority to create its own Merit Promotion and Placement plan that meets its mission requirements. The OIG recommended changes to the NPR intended to ensure that NASA's merit and promotion process is equitable and procedurally correct and to clarify how the plan would apply to non-NASA federal employees. Specifically, the OIG recommended deleting, modifying, or clarifying the requirement for supervisors to ensure that employees within the area of consideration who are absent for legitimate reasons and do not have access to Agency vacancy announcements receive appropriate consideration for promotion opportunities, as requested. The OIG viewed this requirement as placing too much responsibility on supervisors and potentially creating a contentious situation and likely the appearance of favoritism and pre-selection in practice.

NPR 2210.1E, *Release of NASA Software*

NPR 2210.1E establishes procedures and responsibilities for the report, review, assessment, and release of software created by or for NASA. The NPR reinforces the requirement that NASA software be reported and released, both internally and externally, according to law and NASA policies, with appropriate restrictions on the use and redistribution of the software. Of note are Sections 1.5 and 2.6.3.2, which specifically relate to the OIG. Section 1.5 provides that the Inspector General, or one or more designees, is responsible for appointing an individual as Software Release Authority for the purpose of determining the release of forensic software developed by the OIG for law enforcement purposes. Section 2.6.3.2 requires that during the Export Control Assessment of command-and-control software, the Center Export Administrator consult with the Center's OIG staff. The OIG recommended changes to the NPR intended to align NASA's definitions for "open source" and "permissive licenses" with the Open-Source Initiative and Free Software Foundation definitions to provide uniformity and clarity for academia and industry partners.

STATISTICAL DATA

TABLE 21: LEGAL ACTIVITIES AND REVIEWS

Freedom of Information Act Matters	21
Appeals	0
Inspector General Subpoenas Issued	30
Regulations Reviewed	6

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	46–47
Section 405(a)(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	6–32
Section 405(a)(2)	Identification of each recommendation made before the reporting period for which corrective action has not been completed, including the potential costs savings associated with the recommendation	24–32
Section 405(a)(3)	Summary of significant investigations closed during the reporting period	38–39
Section 405(a)(4)	Identification of the total number of convictions during the reporting period resulting from investigations	42
Section 405(a)(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	21–35
Section 405(a)(6)	Information on management decisions made during the reporting period with respect to any audit, inspection, or evaluation issued in a previous reporting period	32–34
Section 405(a)(7)	Information described under section 804(b) of the Federal Financial Management Improvement Act of 1996	–
Section 405(a)(8)	Peer review conducted by another OIG	51
Section 405(a)(9)	Outstanding recommendations from peer reviews of NASA OIG	–
Section 405(a)(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(a)(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	41–42
Section 405(a)(12)	Description of the metrics used for developing the data for the statistical tables	40-42
Section 405(a)(13)(A) and (B)(i)(ii)	Summary of investigations involving senior government employees	43
Section 405(a)(14)	Summary of whistleblower investigations	43
Section 405(a)(15)(A) and (B)	Agency attempts to interfere with OIG independence	–

Inspector General Act Citation	Requirement Definition	Cross Reference Page Numbers
Section 405(a)(16)(A)	Closed inspections, evaluations, and audits not disclosed to the public	21
Section 405(a)(16)(B)	Closed investigations of senior government employees not disclosed to the public	43

APPENDIX B. DEBT COLLECTION

The Senate Report accompanying the supplemental Appropriations and Rescissions Act of 1980 (Pub. L. No. 96-304) requires Inspectors General to report amounts due to the Agency, as well as amounts that are overdue and written off as uncollectible. The NASA Shared Services Center provides this data each November for the previous fiscal year. For the period ending September 30, 2022, the receivables due from the public totaled $759,121, of which $156,527 is delinquent. The amount written off as uncollectible for the period October 1, 2021, through September 30, 2022, was $810,755.

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.

OFFICE OF INVESTIGATIONS

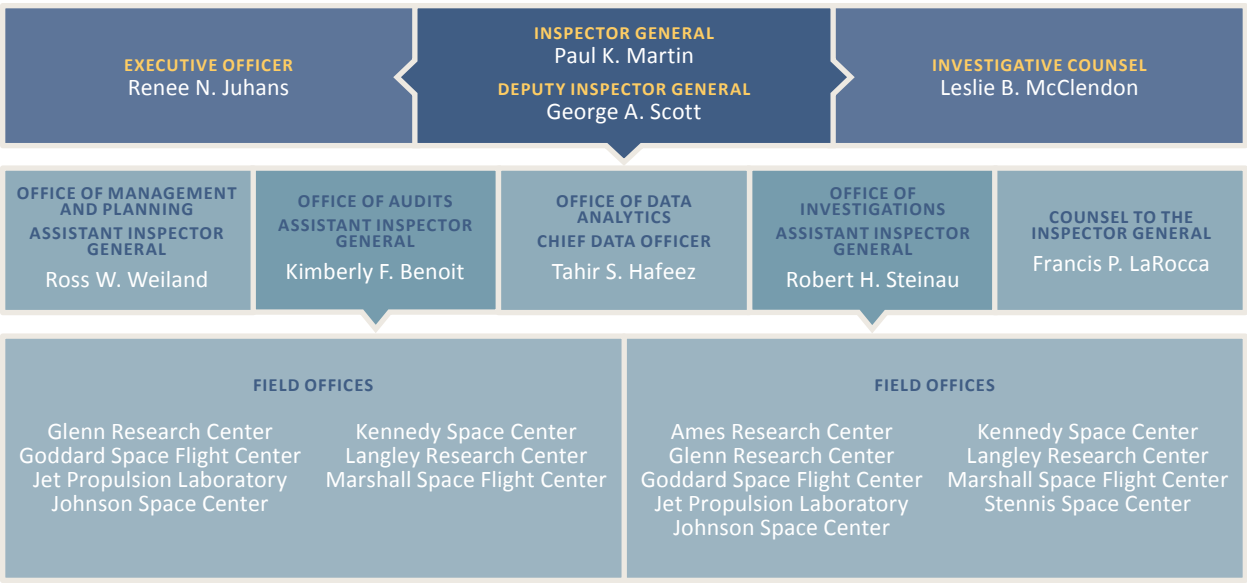
No external peer reviews were performed by the Office of Investigations during this semiannual period. In January 2023, the U.S. Department of Transportation OIG completed its review of the NASA OIG's Office of Investigations and found the office to be compliant with all relevant guidelines. There are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

APPENDIX D. ACRONYMS

DCAA	Defense Contract Audit Agency
DSN	Deep Space Network
FY	fiscal year
GDA	Geospatial Data Act of 2018
IT	information technology
MSR	Mars Sample Return
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
OIG	Office of Inspector General
OMB	Office of Management and Budget
Pu-238	plutonium-238
RPS	radioisotope power systems
SLS	Space Launch System
STEM	science, technology, engineering, and mathematics
STMD	Space Technology Mission Directorate

APPENDIX E. OFFICE OF INSPECTOR GENERAL ORGANIZATIONAL CHART

The OIG's FY 2023 budget of $47.6 million supports the work of 188 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 an independent public accounting firm in its annual audit of NASA's financial statements.

THE OFFICE OF COUNSEL TO THE INSPECTOR GENERAL provides legal advice and assistance to OIG managers, auditors, and investigators. The office serves as OIG counsel in administrative litigation and assists the Department of Justice when the OIG participates as part of the prosecution team or when the OIG is a witness or defendant in legal proceedings. In addition,

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

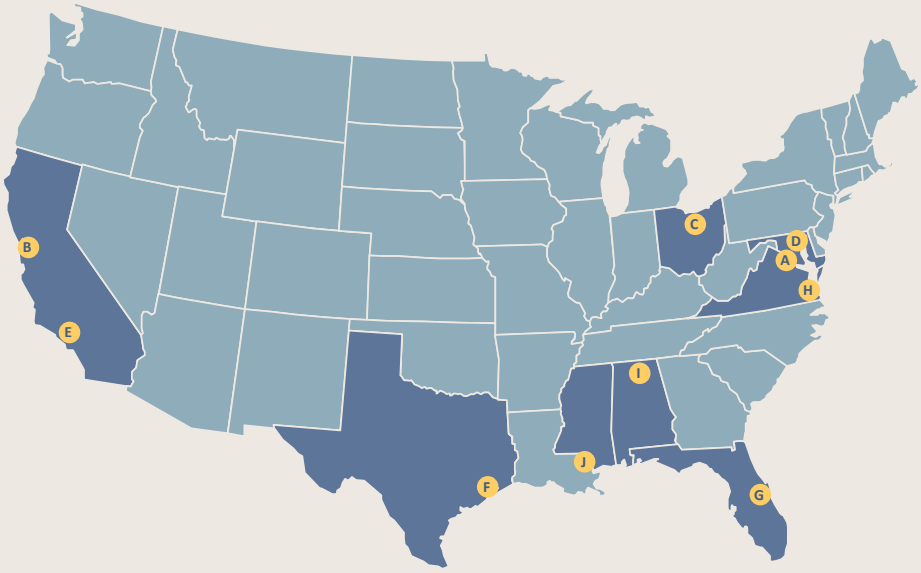
THE OFFICE OF DATA ANALYTICS provides analytic consultation and data services and develops data products to support audits, investigations, and management and planning functions. Composed of statisticians, data scientists, and data engineers, the office also develops a secure data analytic infrastructure 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



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B AMES RESEARCH CENTER
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Tel: 650-604-3682 (Investigations)

C GLENN RESEARCH CENTER
NASA Office of Inspector General
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Glenn Research Center at Lewis Field
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Tel: 216-433-9714 (Audits)
Tel: 216-433-5414 (Investigations)

D GODDARD SPACE FLIGHT CENTER
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