NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

REPORT PURSUANT TO THE GOOD ACCOUNTING OBLIGATION IN GOVERNMENT ACT OF 2019 (P.L. 115-414)

As of December 31, 2023

Table of Contents

NASA'S REQUIRED REPORTING UNDER THE GOOD ACCOUNTING OBLIGATION IN GOVERNMENT ACT OF 2019 (P.L. 115-414)

Background

In 2019, the President signed into law the "Good Accounting Obligation in Government Act." The Act was envisioned to improve transparency into long-standing audit recommendations issued by the Government Accountability Office (GAO) and Federal Offices of Inspectors General (OIG). By requiring agency reporting on the lack of progress towards implementation, the Congress postulated that Federal agencies would be held more accountable and that the public can more readily assess agency funding requests in light of unfulfilled efficiency improvements that could potentially yield cost savings.

Section 2 of the Act imposes an affirmative requirement on Federal agencies to submit an annual report on publicly issued GAO and OIG recommendations classified as "open" for a year or more from the date of the annual budget justification submission. Additionally, the Act also requires that agencies report on publicly issued GAO recommendations which were determined to be "closed, unimplemented." For both categories of recommendations – open and closed, unimplemented – Federal agencies are required to provide an explanation as to why final action[1] has not yet been completed. Finally, the Act also requires agencies perform a reconciliation of discrepancies between recommendations reported by GAO and their OIGs and the recommendations according to their agency records.

Summary

As of December 31, 2023, a combined total of 106 GAO and NASA OIG recommendations in 45 public reports were open for one year or more. Of these recommendations, 39 were issued by GAO in 18 reports and 67 were issued by the NASA OIG in 27 reports. There were no recommendations in GAO reports that were closed, unimplemented that had not already been disclosed in prior reports issued in accordance with P.L. 115-414. NASA reconciled GAO's online database of recommendations and the recommendations reported in OIG's 2023 Fall Semiannual Report with its records.

Reporting Methodology and Report Structure

This report includes GAO and NASA OIG recommendations issued between May 8, 2014, to December 31, 2022, that remained unimplemented for one year or more from the planned fiscal year (FY) 2025 budget justification submission date in early calendar year 2024.

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[1] Final Action: The completion of all actions that NASA management has concluded, in its management decision, are necessary with respect to the findings and recommendations included in an audit report; or, in the event that NASA management concludes no action is necessary, final action occurs when a management decision has been made. Source: *5 U.S.C. 405(a)(2).*

This report contains four appendices:

- Appendix A: GAO Recommendations Open One Year or More
- Appendix B: OIG Recommendations Open One Year or More
- Appendix C: Reconciliation of Agency records with NASA OIG Semiannual Report and GAO's Database of Open Recommendations
- Appendix D: Glossary of Acronyms

For purposes of NASA's reporting under the Act, the following definitions are provided in order to enhance the utility and readability of this report:

- **Open:** Final action has either been completed and is pending auditor verification and validation or final action by NASA is pending/in-progress.
- **Closed:** Final action and corresponding auditor verification and validation of completed necessary actions has been completed.
- **Closed, Unimplemented:** Recommendation has been closed; however, final action has been partially completed, not completed, or action(s) not recommended have been taken. (Applicable only to GAO recommendations).

For recommendations NASA believes have been implemented, but the auditor has not yet completed its verification and validation of the corrective actions taken, this report indicates the status as "Open, Actions Completed." For recommendations with which NASA and the auditors agreed with planned corrective actions, this report provides implementation status updates and timelines to complete planned corrective actions, as well as any budget implications to implementation for GAO recommendations. These recommendations are considered "Open, Actions In-Progress." Recommendations are considered "Open, Agency Non-Concurrence" where NASA disagreed with the recommendation and does not plan to take corrective action; however, no decision by the auditor has been made yet to close the unimplemented recommendation.

Appendix A
GAO Recommendations Open One Year or More

Open, Actions Completed

1. **Report: Telecommunications: Agencies Need Better Controls to Achieve Significant Savings on Mobile Devices and Services** (GAO-15-431; 5/21/2015)

   Recommendation: (28) To help the agency effectively manage spending on mobile devices and services, the Administrator of the National Aeronautics and Space Administration should ensure a complete inventory of mobile devices and associated services is established.

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of the Chief Information Officer

   Target Completion Date: n/a

2. **Report: Telecommunications: Agencies Need Better Controls to Achieve Significant Savings on Mobile Devices and Services** (GAO-15-431; 5/21/2015)

   Recommendation: (29) To help the agency effectively manage spending on mobile devices and services, the Administrator of the National Aeronautics and Space Administration should ensure a reliable inventory of mobile service contracts is developed and maintained.

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of the Chief Information Officer

   Target Completion Date: n/a

3. **Report: Telecommunications: Agencies Need Better Controls to Achieve Significant Savings on Mobile Devices and Services** (GAO-15-431; 5/21/2015)

   Recommendation: (30) To help the agency effectively manage spending on mobile devices and services, the Administrator of the National Aeronautics and Space Administration should ensure procedures to monitor and control spending are established Agency-wide. Specifically, ensure that (1) procedures include assessing devices for zero, under, and over usage; (2) personnel with authority and responsibility for performing the procedures are identified; and (3) the specific steps to be taken to perform the process are documented.

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of the Chief Information Officer

   Target Completion Date: n/a

4. **Report: Cybersecurity Workforce: Agencies Need to Accurately Categorize Positions to Effectively Identify Critical Staffing Needs** (GAO-19-144; 3/12/2019)

Recommendation: (24) To complete the appropriate assignment of codes to their positions performing (information technology) IT, cybersecurity, or cyber-related functions, in accordance with the requirements of the Federal Cybersecurity Workforce Assessment Act of 2015, the Administrator of the National Aeronautics and Space Administration should take steps to review the assignment of the "000" code to any positions at NASA in the 2210 IT management occupational series, assign the appropriate National Initiative for Cybersecurity Education (NICE) framework work role codes, and assess the accuracy of position descriptions.

Status: NASA Action Completed

Office of Primary Responsibility: Office of the Chief Human Capital Officer

Target Completion Date: n/a

5. **Report: NASA Lunar Programs: Opportunities Exist to Strengthen Analyses and Plans for Moon Landing** (GAO-20-68; 12/19/2019)

   Recommendation: (6) The NASA Administrator should ensure that the Office of the Chief Engineer determines under what conditions it is appropriate to complete an analysis of alternatives, particularly when there are multiple pathways—including architectures or programs—that NASA could pursue in the future and document the justification for not completing an analysis.

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of the Chief Engineer

   Target Completion Date: n/a

6. **Report: Telecommunications: Agencies Should Fully Implement Established Transition Planning Practices to Help Reduce Risk of Costly Delays** (GAO-20-155; 4/7/2020)

   Recommendation: (21) The Administrator of the National Aeronautics and Space Administration should ensure that the agency's Chief Information Officer updates the telecommunications inventory to include all telecommunications assets and services in use at the agency, and updates NASA's process for ongoing maintenance of the inventory to include the complete inventory.

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of the Chief Information Officer

   Target Completion Date: n/a

7. **Report: Telecommunications: Agencies Should Fully Implement Established Transition Planning Practices to Help Reduce Risk of Costly Delays** (GAO-20-155; 4/7/2020)

Recommendation: (22) The Administrator of the National Aeronautics and Space Administration should ensure that the agency's Chief Information Officer completes efforts to identify the agency's future telecommunications needs using a complete inventory of existing telecommunications services.

Status: NASA Action Completed

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: n/a

8. **Report: Telecommunications: Agencies Should Fully Implement Established Transition Planning Practices to Help Reduce Risk of Costly Delays** (GAO-20-155; 4/7/2020)

Recommendation: (23) The Administrator of the National Aeronautics and Space Administration should ensure that the agency's Chief Information Officer identifies telecommunications transition roles and responsibilities related to (1) managing human capital during the planning and execution phases of the transition and (2) providing legal expertise during the execution phase of the transition.

Status: NASA Action Completed

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: n/a

9. **Report: Telecommunications: Agencies Should Fully Implement Established Transition Planning Practices to Help Reduce Risk of Costly Delays** (GAO-20-155; 4/7/2020)

Recommendation: (24) The Administrator of the National Aeronautics and Space Administration should ensure that the agency's Chief Information Officer conducts an analysis to support the anticipated cost savings identified as part of the agency's justification for its resource requests related to hardware and software upgrades for the telecommunications transition, and justifies its resource requests for transition program management staff; conducts an analysis to identify staff resources needed for the entire transition effort; and analyzes training needs for staff assisting with the transition.

Status: NASA Action Completed

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: n/a

10. **Report: Telecommunications: Agencies Should Fully Implement Established Transition Planning Practices to Help Reduce Risk of Costly Delays** (GAO-20-155; 4/7/2020)

Recommendation: (25) The Administrator of the National Aeronautics and Space Administration should ensure that the agency's Chief Information Officer takes into

account the agency's mission critical systems and contingency plans in NASA's telecommunications transition timeline.

Status: NASA Action Completed

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: n/a

11. **Report: Federal Contracting: Senior Leaders Should Use Leading Companies' Key Practices to Improve Performance** (GAO-21-491; 7/27/2021)

    Recommendation: (10) The Administrator of NASA should ensure the NASA SPE uses a balanced set of performance metrics to manage the agency's procurement organizations, including outcome-oriented metrics to measure (a) cost savings/avoidance, (b) timeliness of deliveries, (c) quality of deliverables, and (d) end-user satisfaction.

    Status: NASA Action Completed

    Office of Primary Responsibility: Office of Procurement

    Target Completion Date: n/a

12. **Report: Privacy: Dedicated Leadership Can Improve Programs and Address Challenges** (GAO-22-105065; 9/22/2022)

    Recommendation: (48) The Administrator of NASA should incorporate privacy into an organization-wide risk management strategy that includes a determination of risk tolerance.

    Status: NASA Action Completed

    Office of Primary Responsibility: Office of the Chief Information Officer

    Target Completion Date: n/a

13. **Report: Privacy: Dedicated Leadership Can Improve Programs and Address Challenges** (GAO-22-105065; 9/22/2022)

    Recommendation: (49) The Administrator of NASA should fully define and document the role of the senior agency official for privacy or other designated privacy official in reviewing and approving system categorizations, overseeing privacy control assessments, and reviewing authorization packages.

    Status: NASA Action Completed

    Office of Primary Responsibility: Office of the Chief Information Officer

    Target Completion Date: n/a

Open, Actions In-Progress

14. **Report: NASA: Actions Needed to Improve Transparency and Assess Long-Term Affordability of Human Exploration Programs** (GAO-14-385; 5/8/2014)

    Recommendation: (1) To provide the Congress with the necessary insight into program affordability, ensure its ability to effectively monitor total program costs and execution, and to facilitate investment decisions, the NASA's Administrator should direct the Human Exploration and Operations Mission Directorate to establish a separate cost and schedule baseline for work required to support the SLS Block I Exploration Mission 2 (EM-2) and report this information to the Congress through NASA's annual budget submission. If NASA decides to fly the SLS Block I beyond EM-2, establish separate life cycle cost and schedule baseline estimates for those efforts, to include funding for operations and sustainment, and report this information annually to Congress via the agency's budget submission.

    Status: NASA successfully launched Artemis I and plans to use the Block 1 configuration for Artemis II and III. The Artemis II baseline for the Orion capsule was rebaselined in 2021 and is up to date, with no indications that a cost-overrun will occur prior to launch. As a part of the budget submission process, both Space Launch System (SLS) and Exploration Ground Systems (EGS) programs will provide an update to the five-year operational cost estimate in spring 2024, which includes associated Artemis II costs. An update to the schedule for Artemis II launch readiness moving to September 2025 was announced in January 2024 by the Agency.

    In October 2023, a separate Agency Baseline Commitment (ABC) was established for the SLS Exploration Upper Stage (EUS) and its Associated Capabilities (EUS + CAPS) upgrades supporting Block 1B. The SLS Block 1B configuration will begin flying on Artemis IV.

    Budget Implications: None Known

    Office of Primary Responsibility: Exploration Systems Development Mission Directorate

    Target Completion Date: March 15, 2024

15. **Report: NASA: Actions Needed to Improve Transparency and Assess Long-Term Affordability of Human Exploration Programs** (GAO-14-385; 5/8/2014)

    Recommendation: (3) To provide the Congress with the necessary insight into program affordability, ensure its ability to effectively monitor total program costs and execution, and to facilitate investment decisions, because NASA intends to use the increased capabilities of the SLS, Orion, and Ground Systems Development and Operations efforts well into the future and has chosen to estimate costs associated with achieving the capabilities, the NASA's Administrator should direct the Human Exploration and Operations Mission Directorate to establish separate cost and schedule baselines for each additional capability that encompass all life cycle costs, to include operations and

sustainment. When NASA cannot fully specify costs due to lack of well-defined missions or flight manifests, forecast a cost estimate range—including life cycle costs—having minimum and maximum boundaries. These baselines or ranges should be reported to Congress annually via the agency's budget submission.

Status: The SLS Program successfully completed the SLS EUS + CAPS upgrades supporting Block 1B (described herein after as Block 1B) Key Decision Point (KDP) C milestone decision gate. This established an ABC for the SLS Block 1B approved by the Decision Authority (NASA Associate Administrator) in October 2023.

Currently, the EGS program is preparing for the next key decision point for the Mobile Launcher 2 (ML-2), which will include setting an ABC covering both cost and schedule. Both SLS Block 1B and ML-2 are progressing to be ready for Artemis IV. As of 2022, SLS and EGS started reporting a yearly five-year operational cost estimate for the Block 1 and Mobile Launcher 1 (ML-1) costs; the next update is anticipated in spring 2024 in conjunction with the budget process.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: June 30, 2024

16. **Report: Space Launch System: Resources Need to be Matched to Requirements to Decrease Risk and Support Long Term Affordability** (GAO-14-631; 7/23/2014)

Recommendation: (2) To provide the Congress with the necessary insight into program planning and affordability, and to decrease the risk of cost and schedule overruns, NASA's Administrator should direct the Human Exploration and Operations Mission Directorate to take the following action: To allow for a continued assessment of progress and affordability, NASA should structure each future increment of SLS capability with a total cost exceeding the $250 million threshold for designation as a major project as a separate development effort within the SLS program. In doing so, NASA should require each increment to complete both the technical and programmatic reviews required of other major development projects, per the Agency's acquisition and system engineering policies.

Status: In October 2023, an ABC was established for the SLS EUS + CAPS which will fly on Artemis IV. In accordance with NASA Procedural Requirements (NPR) 7120.5, NASA Space Flight Program and Project Management Requirements. Additionally, the SLS Program plans to establish a separate ABC for the SLS Block 2 variant no earlier than six months following the Block 2 Preliminary Design Review, currently slated for June 2025. The Agency will seek to close this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 15, 2024

17. **Report: Space Launch System: Resources Need to be Matched to Requirements to Decrease Risk and Support Long Term Affordability** (GAO-14-631; 7/23/2014)

Recommendation: (3) To provide the Congress with the necessary insight into program planning and affordability, and to decrease the risk of cost and schedule overruns, NASA's Administrator should direct the Human Exploration and Operations Mission Directorate to take the following action: Provide decision makers with an informed basis for making investment decisions regarding the SLS program, NASA should identify a range of possible missions for each future SLS variant that includes cost and schedule estimates and plans for how those possible missions would fit within NASA's funding profile.

Status: The SLS Program successfully completed the SLS EUS + CAPS upgrades supporting Block 1B KDP-C milestone decision gate, which established an ABC for the SLS Block 1B approved by the Decision Authority in October 2023. Additionally, within the already noted life-cycle approach, the Program plans to establish the SLS Block 2 ABC no earlier than six months following the Block 2 Preliminary Design Review, currently slated for June 2025.

As a part of the KDP-E Operational Readiness Review, five-year operational cost estimates were developed for steady state production and operations costs. These include labor, indirect costs, and variable costs such as procurement long-lead materials, production lead times, and minor development/obsolesce. This five-year rolling estimate is applicable to production and operations of the Block 1 variant for Artemis II and beyond. Excluded from the five-year rolling estimate are the major upgrades for Block 1B, Block 2 and restart/recertification of RS-25 production line. The Agency will seek to close this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 15, 2024

18. **Report: NASA Information Technology: Urgent Action Needed to Address Significant Management and Cybersecurity Weaknesses** (GAO-18-337; 5/22/2018)

Recommendation: (8) The Administrator should direct the Chief Information Officer to establish an agency-wide approach to managing cybersecurity risk that includes a cybersecurity strategy that, among other things, makes explicit the agency's risk tolerance, accepted risk assessment methodologies, a process for consistently evaluating risk across the organization, response strategies and approaches for monitoring risk over time, and priorities for risk management investments.

Status: The Enterprise Cybersecurity Risk Management Office has submitted a Strategy document that identifies that need to ensure that the Agency's risk tolerance, accepted risk assessment methodologies, a process for consistently evaluating risk across the organization, response strategies and approaches for monitoring risk over time, and priorities for risk management investments are included.

Budget Implications: None Known

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: February 29, 2024

19. **Report: NASA Commercial Crew Program: Plan Needed to Ensure Uninterrupted Access to the International Space Station** (GAO-18-476; 7/11/2018)

Recommendation: (4) After completing the agency certification review, NASA's Chief Engineer and Chief of Safety and Mission Assurance, with support from the NASA Associate Administrator for Human Exploration and Operation and the Commercial Crew Program Manager, should document lessons learned related to loss of crew as a safety threshold for future crewed spaceflight missions, given the complexity of the metric.

Status: Boeing and NASA continue to make progress mitigating safety critical technical issues as we progress toward Crew Flight Test (CFT) planned for the 3rd Quarter of calendar year (CY) 2024.

Boeing has removed and replaced a significant amount of flammable tape from the CFT spacecraft electrical wiring. Boeing's Starliner spacecraft wiring now complies with CFT flight requirements. Likewise, Boeing and NASA have been mitigating previously identified spacecraft landing parachute issues. Parachute issue mitigation steps has recently culminated with a parachute drop test to gather critical safety information. Final data analysis is ongoing; however, an initial quick look indicates the test was successfully and planned safety data was collected.

These efforts, along with continuing spacecraft, launch vehicle, and ground systems verification closure efforts continue to support a planned launch date by 3rd Quarter CY 2024. A request for extension was submitted to GAO and approved.

Budget Implications: None Known

Office of Primary Responsibility: Space Operations Mission Directorate

Target Completion Date: September 30, 2024

20. **Report: Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research** (GAO-19-265; 4/4/2019)

Recommendation: (10) The Administrator of NASA should develop documented procedures for identifying and addressing alleged violations of its scientific integrity policy.

Status: A revised Scientific Integrity (SI) policy implementation handbook is to be released on or around February 12, 2024. NASA Policy Directive (NPD) 1920.1A, Scientific and Research Integrity – which underpins the implementation handbook – was approved in December 2023. The implementation handbook includes detailed processes for adjudicating and reporting potential SI violations.

Budget Implications: None Known

Office of Primary Responsibility: Office of the Chief Scientist

Target Completion Date: February 12, 2024

21. **Report: NASA Human Space Exploration: Persistent Delays and Cost Growth Reinforce Concerns over Management of Programs** (GAO-19-377; 6/19/2019)

Recommendation: (3) We recommend the NASA Administrator ensure that the NASA Associate Administrator for Human Exploration and Operations direct the EGS program to demonstrate design maturity by completing 3D product modeling of the basic and functional design of the second Mobile Launcher prior to construction start.

Status: The EGS Program completed the ML-2 Critical Design Review (CDR) Step 1 (which focused on ML-2 Hardware and Programmatics) in accordance with NPR 7120.5 and NPR 7123.1, NASA Systems Engineering Processes and Requirements, in January 2024. The ML-2 Step 1 CDR demonstrated that the ML-2 architecture and engineering meets functional and performance requirements for SLS Block 1B (with provisions for Block 2) and is ready for full-scale fabrication, assembly, integration, and Verification and Validation testing. The ML-2 Project Team met all entrance criteria, including completion of all subsystem 90 percent design reviews and successful completion of the integrated critical design review (iCDR) in March 2023, which was a major milestone on the Bechtel contract. The 3D model "fly-thru" that was presented in the iCDR and the Step 1 CDR provided evidence of a complete 3D model of the ML-2 design. The Agency will request closure of this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 15, 2024

22. **Report: NASA Lunar Programs: Opportunities Exist to Strengthen Analyses and Plans for Moon Landing** (GAO-20-68; 12/19/2019)

Recommendation: (2) The NASA Administrator should ensure that the NASA Associate Administrator for Human Exploration and Operations directs the Gateway

program to conduct a joint cost and schedule confidence level at the program level for the Artemis III mission.

Status: A joint cost and schedule confidence level (JCL) analysis was performed to support the Gateway Program's planned readiness for KDP-I. This was made possible due to the successful completion of Engineering Change Proposal 19 Technical Evaluations and the Preliminary Design Review technical closeout in December 2022. The Gateway Program transitioned from formulation to implementation after a successful KDP-I held in July 2023. The Agency will seek to close this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

23. **Report: NASA Lunar Programs: Opportunities Exist to Strengthen Analyses and Plans for Moon Landing** (GAO-20-68; 12/19/2019)

Recommendation: (3) The NASA Administrator should ensure that the NASA Associate Administrator for Human Exploration and Operations directs the Gateway program to update its overall schedule for 2024 to add a KDP-II to occur before system integration.

Status: The Gateway Program transitioned from formulation to implementation after a successful KDP-I held in July 2023. The program is currently focused on preparing for its next major life-cycle review milestone, the Gateway CDR-Informed Sync Review, anticipated no earlier than late CY 2024. Consistent with the tailoring approach applied to the life-cycle management of Tightly Coupled Programs, Gateway must complete this next step before a plan and schedule for future reviews can be confirmed. Given that an ABC was established to include schedule commitment, we will be submitting a request for closure.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

24. **Report: NASA Lunar Programs: Opportunities Exist to Strengthen Analyses and Plans for Moon Landing** (GAO-20-68; 12/19/2019)

Recommendation: (4) The NASA Administrator should ensure that the NASA Associate Administrator for Human Exploration and Operations creates a life-cycle cost estimate for the Artemis III mission.

Status: The Artemis implementation is unique from other NASA activities in that the flexible architecture is a guiding principle within the Artemis program, enabling NASA to adapt to changing requirements, leverage partnerships, and achieve sustainable and cost-effective human exploration of the Moon and beyond. By embracing flexibility and innovation, NASA aims to establish a robust infrastructure and lay the foundation for future exploration missions to Mars and beyond. The approach NASA is pursuing ensures that capabilities are developed to meet the needs of the architecture. These developments are consistent with NASA policy and follow the development process as documented in NASA command media (i.e., NPR 7120.5). NASA recognizes OIG's critical role in promoting Artemis accountability and transparency; however, imposing a flight-by-flight cost assessment as a benchmark on individual Artemis missions can potentially hinder the success, innovation, and long-term sustainability of space missions. A more balanced approach that considers both short-term cost containment and long-term mission objectives is essential for achieving meaningful and impactful exploration and scientific discovery in space.

NASA utilizes a range of management and reporting tools to ensure transparency and accountability at the mission level for all stakeholders. These tools include project-level cost and schedule joint confidence level informed development commitments (including for major developmental upgrades), independent review at major life-cycle reviews and associated KDPs, documented and configuration-controlled mission definition baselines, by-mission schedule risk assessments, life-cycle cost estimates in Phase E, five-year rolling estimates consistent with guidance provided in 7120.5F, independent Agency financial auditing (including a twelfth consecutive unmodified clean finding in 2023), annual Agency budget requests, Agency-led baseline performance and major program reviews, independent reviews by the NASA Advisory Council and Aerospace Safety Advisory Panel, and multiple ongoing reviews from the governmental oversight entities. The Agency will request closure of this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: February 28, 2024

25. Report: NASA Human Space Exploration: Significant Investments in Future Capabilities Require Strengthened Management Oversight (GAO-21-105; 12/15/2020)

Recommendation: (1) We recommend that the NASA Administrator ensure that the NASA Associate Administrator for Human Exploration and Operations Mission Directorate establish cost and schedule baselines for SLS Block 1B, SLS Block 2, Mobile Launcher 2, and Orion Docking System at their preliminary design reviews or as soon as practicable in advance of critical design reviews.

Status: In October 2023, a separate ABC was established for the SLS EUS + CAPS upgrades supporting Block 1B. Currently, the EGS program is preparing for the next KDP for the ML-2, which will include setting an ABC covering both cost and schedule.

Both SLS Block 1B and ML-2 are progressing to be ready for Artemis IV. Orion Rebaseline documentation (included NASA Docking System (NDS) under the Design Development Test and Evaluation (DDT&E) cost estimate). NDS has passed the design phase, and hardware delivery is scheduled for Spring 2024. NDS is an element in the Artemis III vehicle integration. The Agency will seek to close this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: December 31, 2024

26. Report: NASA Human Space Exploration: Significant Investments in Future Capabilities Require Strengthened Management Oversight (GAO-21-105; 12/15/2020)

Recommendation: (2) We recommend that the NASA Administrator ensure that the NASA Associate Administrator for Human Exploration and Operations Mission Directorate directs the Exploration Systems Development organization to include cost, schedule, and technical performance updates for SLS Block 1B, SLS Block 2, Mobile Launcher 2, and the Orion Docking System in its quarterly program status reviews in order to maintain oversight of these development projects.

Status: To ensure transparency and accountability at the mission level for all stakeholders, NASA utilizes a range of management and reporting tools. These tools include independent review at major life-cycle reviews and associated KDPs, documented and configuration-controlled mission definition baselines, by-mission schedule risk assessments, life-cycle cost estimates in Phase E, five-year rolling estimates consistent with guidance provided in NPR 7120.5F, independent Agency financial auditing (including a twelfth consecutive unmodified clean finding in 2023), annual Agency budget requests, Agency-led baseline performance and major program reviews, independent reviews by the NASA Advisory Council and Aerospace Safety Advisory Panel, and multiple ongoing reviews from the OIG and GAO.

The Orion Rebaseline in 2021 includes the NDS under the DDT&E cost estimate. NDS hardware delivery is scheduled for Spring 2024. NDS is an element in the Artemis III vehicle integration. In October 2023, a separate ABC was established for the SLS EUS + CAPS upgrades supporting Block 1B. The SLS Block 1B configuration will begin flying on Artemis IV. Additionally, the SLS Program plans to establish a separate ABC for the SLS Block 2 variant no earlier than six months following the Block 2 Preliminary Design Review, currently slated for June 2025. The Agency will seek to close this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

27. **Report: Federal Research: Agencies Need to Enhance Policies to Address Foreign Influence** (GAO-21-130; 12/17/2020)

    Recommendation: (7) The Administrator of the National Aeronautics and Space Administration should update the agency's conflict of interest policy to include a definition on non-financial conflicts, such as the one developed by OSTP, and address these conflicts, both foreign and domestic.

    Status: In December 2023, the Office of Procurement (OP) partially addressed Recommendations 7 and 8 in GAO-21-130 by implementing a new conflict of interest disclosure policy for NASA grant recipients. To address the remaining components of recommendations 7 and 8, OP has developed draft policy to address conflict of commitment (COC) disclosure requirements. However, before OP can finalize that policy, we will need to review and incorporate, as necessary, forthcoming guidance from the Office of Science and Technology Policy (OSTP) regarding standardized COC disclosure forms. Once the OSTP guidance is released, we intend to finalize and release NASA's COC disclosure policy for grant recipients by August 2024.

    Budget Implications: None Known

    Office of Primary Responsibility: Office of Procurement

    Target Completion Date: October 1, 2024

28. **Report: Federal Research: Agencies Need to Enhance Policies to Address Foreign Influence** (GAO-21-130; 12/17/2020)

    Recommendation: (8) The Administrator of the National Aeronautics and Space Administration should document procedures, including roles and responsibilities for addressing and enforcing failures to disclose required information, both foreign and domestic.

    Status: In December 2023, OP partially addressed Recommendations 7 and 8 in GAO-21-130 by implementing a new conflict of interest disclosure policy for NASA grant recipients. To address the remaining components of recommendations 7 and 8, OP has developed draft policy to address COC disclosure requirements. However, before OP can finalize that policy, we will need to review and incorporate, as necessary, forthcoming guidance from OSTP regarding standardized COC disclosure forms. Once the OSTP guidance is released, we intend to finalize and release NASA's COC disclosure policy for grant recipients by August 2024.

    Budget Implications: None known

    Office of Primary Responsibility: Office of Procurement

    Target Completion Date: October 1, 2024

29. **Report: NASA Lunar Programs: Significant Work Remains, Underscoring Challenges to Achieving Moon Landing in 2024** (GAO-21-330; 5/26/2021)

Recommendation: (2) The NASA Administrator should ensure that the NASA Office of the Chief Engineer develop guidance to mitigate risks associated with delaying the establishment of high-level requirements early in the acquisition process when using service-type contracts and incorporate it in its reference guide or a similar document.

Status: Following the initial response to the recommendation, NASA established the Chief Program Management Officer (CPMO) and transitioned program management related functions previously under the Office of the Chief Engineer (OCE) to the CPMO. The NASA response to this recommendation will now be provided by the CPMO.

The CPMO, in coordination with OCE, drafted a Commercial Oriented Partnership Guide in summer 2023 and completed the comments disposition process. The document is intended to serve as a reference guide regarding program and project management approaches for commercially oriented partnerships used by NASA for space flight programs and projects. It includes examples of tailoring approaches used by human space flight programs and projects that have implemented commercial partnerships. It also includes considerations based on key observations from the examples of how programs and project adapted their program management strategies to advance non-traditional commercial-oriented partnerships. The guide will contribute to mitigating risks associated with delaying the establishment of high-level requirements early in the acquisition process when using service- or commercial-type contracts. There is additional work to finalize prior to publication in the NASA Technical Report System library and may be updated with other examples and/or use the information to inform future policy revisions (e.g., NPR 7120.5). Work is slowed by personnel challenges including a loss of support contractors involved in the effort.

Budget Implications: None Known

Office of Primary Responsibility: Chief Program Management Officer

Target Completion Date: April 30, 2024

30. Report: NASA Lunar Programs: Significant Work Remains, Underscoring Challenges to Achieving Moon Landing in 2024 (GAO-21-330; 5/26/2021)

Recommendation: (3) The NASA Administrator, in coordination with the Associate Administrator for the Human Exploration and Operations Mission Directorate, should ensure the Gateway program, in advance of the Power and Propulsion Element (PPE) project's confirmation review, assesses the solar electric propulsion thrusters' technical risks and determine whether off-ramps—such as reduced requirements for PPE—are needed or whether the project's schedule should be reassessed.

Status: The Gateway PPE assessed the Advanced Electric Propulsion System (AEPS) Thruster technical risk and, as part of Gateway Initial Capability (GIC), successfully completed a GIC JCL analysis in support of setting its ABC as approved by the Agency Program Management Council (APMC) in July 2023. The cost and schedule risks for PPE were included in this JCL analysis. Coupled with the delivery of the AEPS Qualification Model, the start of both acceptance and wear testing, and continued

manufacturing of flight AEPS hardware, we will request closure of this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

31. **Report: Research Reliability: Federal Actions Needed to Promote Stronger Research Practices** (GAO-22-104411; 7/28/2022)

Recommendation: (6) The Administrator of NASA should take steps to collect information to determine whether current policies and requirements are adequate to achieve transparency by ensuring research results and data are findable, accessible, and usable, and implement programmatic or policy changes, if needed.

Status: NASA continues to use longstanding policies requiring findability, usability, and accessibility of its funded scientific research.

NASA's policies for applying the Findability, Accessibility, Interoperability, and Reusability (FAIR) principles in its funded research are documented in NASA's Science Information Policy, available at: https://science.nasa.gov/researchers/open-science/science-information-policy/. In turn, that document links to the Science Mission Directorate's (SMD) Policy Document SPD-41a (at: https://science.nasa.gov/spd-41/), and together, the two documents provide complete details on the application of these policies and their timelines, including links to at least 15 other policy documents governing aspects of this implementation, including timelines. This set documentation runs to several dozen pages, and full details can be found at those links and the links they contain.

NASA's efforts in its Science Information Policies predate the GAO audit in question, including NASA's Transition to Open Science initiative. These efforts mandate that NASA's research products be findable, accessible, interoperable, and reusable. The SMD has been leading these efforts since at least 2021, with preparatory actions extending to at least 2019. These FAIR requirements explicitly address the intent of the GAO recommendation that "research results and data are findable, accessible and usable" by requiring these exact conditions. Accordingly, NASA's status on this recommendation is that we are in full compliance as demonstrated in the documentation cited above.

Budget Implications: None Known

Office of Primary Responsibility: Office of the Chief Scientist

Target Completion Date: December 31, 2023

32. **Report: Leading Practices: Agency Acquisition Policies Could Better Implement Key Product Development Principles** (GAO-22-104513; 3/10/2022)

Recommendation: (8) The NASA Administrator should ensure that the NASA Office of the Chief Engineer update NASA acquisition policies to fully implement the following principle throughout development: applying iterative design approaches.

Status: The OCE, in collaboration with the Office of the Chief Information Officer (OCIO), completed an assessment of the recommendations for the application of iterative design approaches. There are two sub-principles in work based on the GAO recommendation.

- GAO found that NASA policies did not fully implement the leading sub-principle of using modern design tools during both hardware and software development that enable multiple design iterations (sub-principle #2.1) because the policies did not reference modern design tools for hardware.
- GAO found that and sub-principle 3.3 (iterative design and testing to identify a minimum product or initial capability followed by subsequent releases) is not implemented. NPR 7120.7A, Information Technology Program Requirements, requires a proof of concept to be incorporated into later developments, but a proof of concept is not equivalent to an initial release of capability, which can be used to solicit user feedback and inform subsequent projects.

OCE is continuing to work with OCIO to provide clarification to policy documentation. Both organizations are evaluating if there are impacts to key organizations ahead of the update to policy documentation. We anticipate the work to be complete by the fall of 2024.

Budget Implications: None Known

Office of Primary Responsibility: Office of the Chief Engineer

Target Completion Date: April 25, 2024

33. **Report: Leading Practices: Agency Acquisition Policies Could Better Implement Key Product Development Principles** (GAO-22-104513; 3/10/2022)

Recommendation: (9) The NASA Administrator should ensure that the NASA Office of the Chief Engineer update NASA acquisition policies to fully implement the following principle throughout development: incorporating feedback from users of initial capabilities.

Status: The CPMO needs to coordinate with stakeholders to evaluate how GAO's concerns can be mitigated within policy – or to more clearly identify existing policy that satisfies GAO's recommendation. If it is determined that an update to policy is required that represents more than an administrative edit, a new Request for Extension may be submitted. CPMO believes NASA is already meeting the recommendation's intent and will work to more clearly identify existing policy that substantiates within the requested extension period. Since our previous Request for Extension, more urgent short-term priorities (e.g., Mars Sample Return (MSR) Independent Review Board Response Team)

have delayed action on this effort. CPMO needs more time to address the noted recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Chief Program Management Officer

Target Completion Date: April 1, 2024

34. Report: NASA Lunar Programs: Improved Mission Guidance Needed as Artemis Complexity Grows (GAO-22-105323; 9/8/2022)

Recommendation: (1) The NASA Administrator should ensure that the Chief Financial Officer, in coordination with the mission directorates, develops Artemis mission-level schedule management guidance.

Status: The Artemis Campaign Division (ACD) Schedule Management Plan was published in July 2022. The ACD Schedule Management Plan process was validated with the successful implementation of JCL analysis informing Gateway Program KDP-C, Human Landing System (HLS) KDP-C, and SLS EUS + CAPS KDP-C. Decision Memos for each of these KDPs were released on January 9, 2024. The Office of the Chief Financial Officer (OCFO) coordinated with ACD on lessons learned from ACD Schedule Management Plan, and OCFO is working on updating Agency Schedule Management Handbook to reflect these lessons. The estimated date of completion for updated Agency Schedule Management Handbook is March 15, 2024. Additional lessons learned, as applicable to complex multi-mission programs, from the recent Agency MSR Independent Review Board will also be incorporated in Schedule Management Handbook.

Budget Implications: None Known

Office of Primary Responsibility: Office of the Chief Financial Officer

Target Completion Date: April 30, 2024

35. Report: NASA Lunar Programs: Improved Mission Guidance Needed as Artemis Complexity Grows (GAO-22-105323; 9/8/2022)

Recommendation: (2) The NASA Administrator, in coordination with the relevant mission directorates, should ensure that NASA conducts a schedule risk analysis for the Artemis II mission as close as possible to completion of the Artemis I mission and update it as needed to incorporate schedule updates and new risks.

Status: An Artemis II preliminary schedule risk analysis (SRA) was performed post Artemis I mission as planned. This preliminary SRA used program data from January 2023 and allowed the Exploration Systems Development Mission Directorate Schedule Analysis Team to validate its methods and identify critical path items. The preliminary SRA did not include a complete view of the Artemis II risk posture; however, it did identify the Orion Crew Module/Crew Service Module assembly, integration, and

production milestone through EGS integrated operations as the main critical path drivers for Artemis II.

The preliminary SRA is a schedule management tool but does not represent the only source of data utilized to inform the new Artemis II launch readiness date. Following the completion of the preliminary SRA, the Moon to Mars (M2M) Programs continued to evaluate findings from the flight and ground testing which have led to additional work and scope required in support of Artemis II. NASA concluded that these items (e.g., Orion Heatshield) posed a large enough safety risk that the manifest date needed to move. Additionally, ML-1 is undergoing integrated testing that has taken longer than planned as well as upgrades for the new crew escape system and a new liquid hydrogen sphere at the pad. Ensuring crew safety is the primary driver for the Artemis II schedule change. The Agency announced an updated schedule for Artemis II in January 2024, moving the launch readiness to September 2025. The Agency will request closure for this recommendation.

Budget Implications: None Known

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

36. Report: NASA Lunar Programs: Improved Mission Guidance Needed as Artemis Complexity Grows (GAO-22-105323; 9/8/2022)

Recommendation: (4) The NASA Administrator should ensure that the Office of the Chief Human Capital Officer develops guidance that identifies a regular and recurring process for long-term Artemis workforce scenario planning to address future uncertainties, at least 5 years beyond the existing 5-year workforce plans.

Status: NASA's Policy Directive on Strategic Workforce Planning was published in February 2022 and established NASA's three strategic workforce planning interests. These interests are to: 1) Create agility in the workforce, 2) Become more demand-driven (versus supply-driven) to respond to changes in the mission, and 3) Strategically shape the workforce to meet both near- and long-term goals and objectives. In the winter of 2022-2023 the NASA Mission Directorates drafted guidance that provided additional information, particularly addressing long-term plans, beyond what is in the one-year budget submission to support conversations regarding outyear workforce planning. This was released to the Centers in February 2023. In April 2023, all NASA Centers had provided initial analysis of long-term Mission Directorate plans in terms of impacts to local workforce and addressed any change of workforce strategy if needed. NASA will continue to conduct this workforce analysis annually to effectively respond to both known and uncertain mission demand and will be strategically shaped to provide the mix of skills to support NASA's unique work roles. We formally submitted our response to GAO in the summer of 2023, meeting GAO's requirements. GAO informed us they would let us know if they had any follow up, but we have heard nothing as of January 2024.

Budget Implications: None Known

Office of Primary Responsibility: Office of the Chief Human Capital Officer

Target Completion Date: September 30, 2023

Open, Agency Non-Concurrence

37. Report: NASA Information Technology: Urgent Action Needed to Address Significant Management and Cybersecurity Weaknesses (GAO-18-337; 5/22/2018)

Recommendation: (3) The Administrator should direct the Chief Information Officer to address, in conjunction with the Chief Human Capital Officer, gaps in IT workforce planning by fully implementing the eight key IT workforce planning activities noted in this report.

Comments: NASA did not concur with the recommendation as NASA was conducting a comprehensive, Agency-wide assessment that was designed to ensure that NASA mission support resources are optimally structured to achieve the NASA mission.

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: n/a

38. Report: NASA Lunar Programs: Significant Work Remains, Underscoring Challenges to Achieving Moon Landing in 2024 (GAO-21-330; 5/26/2021)

Recommendation: (1) The NASA Administrator, in coordination with the Associate Administrator for the Science Mission Directorate, should ensure the Volatiles Investigating Polar Exploration Rover (VIPER) project office includes relevant development costs from the Resource Prospector project and the cost of the Commercial Lunar Payload Services task order for the delivery of VIPER to the lunar surface into its cost baseline.

Comments: NASA did not concur with the recommendation. The VIPER mission was confirmed to enter the development phase on February 23, 2021, at a total life-cycle cost of $433.5M. This amount is reported as the ABC and includes the full development and operations costs for VIPER. As GAO noted, this amount does not include early technology development investments made by NASA, nor does it include the Commercial Lunar Payload Services (CLPS) delivery costs. The NASA ABC for VIPER includes only costs that are managed by the VIPER project which is, therefore, accountable for meeting the project budget and schedule commitments. The VIPER mission, implemented within SMD, is a significantly different and much more capable design than the Resource Prospector concept which evolved, over time, under the Human Exploration and Operations Mission Directorate (HEOMD), Space Technology Mission Directorate (STMD), and Office of the Chief Technologist. Development costs from RP are analogous to early technology development investments which typically precede our

missions. Costs for early technology development and for prior flights of instruments, spacecraft bus design, antennae or lander designs, etc., often referred to as design heritage, are not carried into the baseline cost of a later mission.

NASA's CLPS initiative represents an innovative approach to delivering science and technology payloads to the Moon and is not directly analogous to other launch services procured by NASA for SMD missions. NASA's technical project management control over the newly developed CLPS-provided lunar surface delivery is significantly different from standard launches as procured by NASA's Launch Service Program; with CLPS, NASA procures the surface delivery as a service and inherently has less ability to shape and control the launch integration and process. In addition, the CLPS task orders (TO) are not managed by the delivered payload(s) teams, such as VIPER, under the Planetary Science Division's management. Every CLPS TO is managed by the CLPS project office at the Johnson Space Center for the SMD Deputy Associate Administrator for Exploration. CLPS TOs often cover launch and delivery services for multiple payloads at a time, and the cost of the TO cannot be accurately allocated to individual payloads. For these reasons, SMD is not including the CLPS cost in the Project ABC.

NASA is transparent that the CLPS delivery costs are in addition to the VIPER ABC and required to achieve mission success. The VIPER payload will be accommodated on CLPS TO 20A, which contracts Astrobotic to deliver the VIPER rover. This is clearly documented in VIPER's KDP-C Decision Memorandum, acknowledging the CLPS TO cost to deliver VIPER as $226.5M above VIPER's cost of $433.5M.

The absence of RP development and CLPS delivery costs from VIPER's baseline cost will not deter or prohibit measuring VIPER's progress and tracking cost performance. On the contrary, it will allow the performance of VIPER's direct scope, which is under the Project Manager's control, to be measured and tracked.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: n/a

39. Report: Research Reliability: Federal Actions Needed to Promote Stronger Research Practices (GAO-22-104411; 7/28/2022)

Recommendation: (5) The Administrator of NASA should collect information on relevant indicators of rigor to assess the research projects the agency funds, and implement steps, as needed, to promote strong research practices in future work.

Comments: NASA did not concur with the recommendation. NASA is committed to ensuring research reliability in the research projects that it funds. NASA believes that the best way to ensure research reliability is the peer review process, which has long been the gold standard for scientific credibility. Accordingly, NASA relies on the peer review process in the scientific community to assess research rigor, quality, transparency, and relevance of science proposals submitted to NASA, as well as the scientific journal publications arising from NASA-funded research. Furthermore, NASA is aware of little to no evidence of weak research practices in the research the Agency funds. Finally,

while NASA values the recommendation's goal of promoting strong research practices in NASA-funded research, NASA lacks the resources that would be necessary to collect information on indicators of rigor.

Office of Primary Responsibility: Office of the Chief Scientist

Target Completion Date: n/a

Appendix B
OIG Recommendations Open One Year or More

Open, Actions Completed

1. **Report: NASA's Construction of Facilities** (IG-21-027; 9/8/2021)

   Recommendation: (3) In coordination with the Mission Directorates, institute a process to ensure facility requirements are identified and funding sources are specified during a program's development and implementation phases.

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of Strategic Infrastructure

   Target Completion Date: n/a

2. **Report: NASA's Volatiles Investigating Polar Exploration Rover (VIPER) Mission** (IG-22-010; 4/6/2022)

   Recommendation: (3) Update NPR 7120.8 to require major acquisition projects that cost over $250 million to complete a JCL analysis.

   Status: NASA Action Completed

   Office of Primary Responsibility: Chief Program Management Officer

   Target Completion Date: n/a

3. **Report: NASA's Volatiles Investigating Polar Exploration Rover (VIPER) Mission** (IG-22-010; 4/6/2022)

   Recommendation: (4) Update NPR 7120.8 to require major acquisition projects that cost over $250 million to implement Earned Value Management (EVM).

   Status: NASA Action Completed

   Office of Primary Responsibility: Chief Program Management Officer

   Target Completion Date: n/a

4. **Report: NASA's Management of the Mobile Launcher 2 Contract** (IG-22-012; 6/9/2022)

   Recommendation: (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 Earned Value Management System (EVMS).

   Status: NASA Action Completed

   Office of Primary Responsibility: Office of Procurement

Target Completion Date: n/a

Open, Actions In-Progress

5. **Report: NASA's Management of Electromagnetic Spectrum** (IG-17-012; 3/9/2017)

   Recommendation: (2) Incorporate the "Spectrum Guidance for NASA Small Satellite Missions" into formal NASA electromagnetic spectrum policies NPD 2570.5E, "NASA Electromagnetic Spectrum Management - Revalidated 9/13/16," and NPR 2570.1C, "NASA Radio Frequency Electromagnetic Spectrum Management Manual."

   Status: Language was added on NASA small satellite missions to NPD 2570.5E. Additionally, NPR 2570.1C includes language applicable to Agency spectrum users. NASA believes it is compliant with the recommendation and any further alteration would make the document non-compliant and unacceptable according to NASA's rules.

   Office of Primary Responsibility: Space Operations Mission Directorate

   Target Completion Date: January 17, 2024

6. **Report: Audit of NASA's Historic Property** (IG-19-002; 10/22/2018)

   Recommendation: (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.

   Status: Per the recommendations from the OIG (IG-19-002, Audit of NASA's Historic Property), NASA is continuing to develop a comprehensive process to identify and manage our heritage assets. To accomplish this, NASA held a process identification and improvement (Lean Six Sigma Kaizen) event in January 2023 with participation from the OCFO, Office of Communications (OCOMM), and Office of Strategic Infrastructure (OSI). During the event, NASA documented the current and future state of the heritage assets process. NASA also developed a Heritage Assets Implementation Plan which included action items that aligned to the future state and were assigned to the appropriate organizations with expected completion dates. NASA has continued to work on the action items and is currently revising the implementation plan with dates of completion scheduled for summer 2024.

   Office of Primary Responsibility: Office of Communications

   Target Completion Date: July 1, 2024

7. **Report: Audit of NASA's Historic Property** (IG-19-002; 10/22/2018)

Recommendation: (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.

Status: Per the recommendations from the OIG (IG-19-002), NASA is continuing to develop a comprehensive process to identify and manage our heritage assets. To accomplish this, NASA held a process identification and improvement (Lean Six Sigma Kaizen) event in January 2023 with participation from OCFO, OCOMM, and OSI. During the event, NASA documented the current and future state of the heritage assets process. NASA also developed a Heritage Assets Implementation Plan which included action items that aligned to the future state and were assigned to the appropriate organizations with expected completion dates. NASA has continued to work on the action items and is currently revising the implementation plan with dates of completion scheduled for summer 2024.

Office of Primary Responsibility: Office of Communications

Target Completion Date: July 1, 2024

8. **Report: Audit of NASA's Historic Property** (IG-19-002; 10/22/2018)

Recommendation: (5) Ensure NASA policies and procedures for using the proceeds from facilities leased under National Historic Preservation Act (NHPA) authority appropriately aligns with Agency goals to minimize excess facilities.

Status: NPR 8800.15C, Real Estate Management Program, has been updated to address the recommendation cited in this audit. Currently the NPR is in the review cycle at the NASA leadership level, and OSI is expecting routing and approval to be completed within the next few months.

Office of Primary Responsibility: Office of Strategic Infrastructure

Target Completion Date: June 30, 2024

9. **Report: Management of NASA's Europa Mission** (IG-19-019; 5/29/2019)

Recommendation: (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 and mitigating conflicts of interest risks.

Status: SMD has engaged in ongoing dialog with the OIG, Office of the General Counsel (OGC), NASA Office of Jet Propulsion Laboratory Management and Oversight (NOJMO) and other stakeholders and has reassessed the process of isolating key project personnel from instrument selection. As a result, a draft policy paper has been prepared and is currently being reviewed by appropriate SMD senior officials.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: April 26, 2024

10. **Report: NASA's Security Management Practices** (IG-20-001; 10/21/2019)

Recommendation: (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.

Status: NASA evaluated Agency-wide jurisdictions and made site specific determinations including Department of Defense jurisdiction, "Concurrent Jurisdiction," split arrangement between "Federal Exclusive Jurisdiction" and "Concurrent Jurisdiction," and "Proprietary Jurisdiction."

Office of Primary Responsibility: Office of Protective Services

Target Completion Date: January 18, 2024

11. **Report: NASA's Security Management Practices** (IG-20-001; 10/21/2019)

Recommendation: (5) Coordinate with the Office of the 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.

Status: In 2018, the Office of Protective Services (OPS) coordinated with NASA OGC and obtained their legal opinion that enabled NASA and OPS to pursue an administrative modification to the Space Act which will allow NASA security officers to carry firearms in their official duty off-Center while protecting NASA personnel and/or property. A copy of the referenced OGC memorandum, dated July 6, 2018, has been provided to the OIG. NASA has endorsed and sent forward to the Office of Management and Budget (OMB) the legislative proposal created by OPS every year since 2018, and it has yet to be enacted into law. For the 2022 cycle, NASA and OPS once again resubmitted the legislative proposal for consideration by the 117th Congress of the United States; however, it was not enacted. The OPS Assistant Administrator was informed that the Office of Legislative and Intergovernmental Affairs (OLIA) will initiate conversations with congressional staffers in pushing the legislative proposal for consideration by the 118th Congress.

Office of Primary Responsibility: Office of Protective Services

Target Completion Date: February 28, 2024

12. **Report: NASA's Management of Crew Transportation to the International Space Station** (IG-20-005; 11/14/2019)

Recommendation: (2) Correct identified safety-critical technical issues before the crewed test flights, including parachute, propulsion, and launch abort systems, to ensure sufficient safety margins exist.

Status: A request for extension was submitted and approved by the OIG. We should be on track to close the recommendation by September 30, 2024. The new date for the Boeing CFT is the 3rd Quarter of CY 2024.

Office of Primary Responsibility: Space Operations Mission Directorate

Target Completion Date: September 30, 2024

13. **Report: NASA's Management of Distributed Active Archive Centers** (IG-20-011; 3/3/2020)

Recommendation: (1) In conjunction with Earth Science Data and Information System (ESDIS), once NISAR and Surface Water and Topography (SWOT) 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 Distributed Active Archive Centers (DAAC) footprint.

Status: At present, NASA-ISRO Synthetic Aperture Radar's (NISAR) launch readiness date is March 30, 2024. The recommendations assessment can be initiated following operationalization of the mission and once sufficient data has been realized.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: March 31, 2024

14. **Report: NASA's Management of Space Launch System Program Costs and Contracts** (IG-20-012; 3/10/2020)

Recommendation: (2a) Review HEOMD and NASA program management policies, procedures, and ABC reporting processes to provide greater visibility into current, future, and overall cost and schedule estimates for the SLS Program and other human space flight programs. This review shall include the following: Rebaselining Artemis I costs to appropriately and transparently track costs that include SLS development costs and activities tied to the first SLS launch.

Status: The approach NASA is pursuing ensures that capabilities are developed to meet the needs of the architecture. These developments are consistent with NASA policy and follow the development process as documented in NASA command media (i.e., NPR 7120.5). Both the SLS and EGS programs successfully completed KDP-E, effectively transitioning these programs into the operations phase of their life cycle for the SLS Block 1 and EGS ML-1 configuration. Completion of KDP-E required the programs to provide an initial capability estimate to the Chief Financial Officer, as well as a five-year estimate for operational costs that are distinct from any ongoing development projects or upgrades. The five-year estimate is in work for 2024.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 15, 2024

15. **Report: NASA's Management of Space Launch System Program Costs and Contracts** (IG-20-012; 3/10/2020)

Recommendation: (2b) 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. This review shall include the following: Establishing methodologies and processes to track and set cost commitments for Artemis II.

Status: The Artemis implementation is unique from other NASA activities in that the flexible architecture is a guiding principle within the Artemis program, enabling NASA to adapt to changing requirements, leverage partnerships, and achieve sustainable and cost-effective human exploration of the Moon and beyond. By embracing flexibility and innovation, NASA aims to establish a robust infrastructure and lay the foundation for future exploration missions to Mars and beyond. The approach NASA is pursuing ensures that capabilities are developed to meet the needs of the architecture. These developments are consistent with NASA policy and follow the development process as documented in NASA command media (i.e., NPR 7120.5). NASA recognizes OIG's critical role in promoting Artemis accountability and transparency; however, imposing a flight-by-flight cost assessment as a benchmark on individual Artemis missions can potentially hinder the success, innovation, and long-term sustainability of space missions. A more balanced approach that considers both short-term cost containment and long-term mission objectives is essential for achieving meaningful and impactful exploration and scientific discovery in space.

NASA utilizes a range of management and reporting tools to ensure transparency and accountability at the mission level for all stakeholders. These tools include project-level cost and schedule JCL-informed development commitments (including for major developmental upgrades), independent review at major life-cycle reviews and associated KDPs, documented and configuration-controlled mission definition baselines, by-mission schedule risk assessments, life-cycle cost estimates in Phase E, five-year rolling estimates consistent with guidance provided in NPR 7120.5F, independent Agency financial auditing (including a twelfth consecutive unmodified clean finding in 2023), annual Agency budget requests, Agency-led baseline performance and major program reviews, independent reviews by the NASA Advisory Council and Aerospace Safety Advisory Panel, and multiple ongoing reviews from the governmental oversight entities. The Agency will request closure of this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

16. **Report: NASA's Management of Space Launch System Program Costs and Contracts** (IG-20-012; 3/10/2020)

Recommendation: (2c) 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. This review shall include the following: Determining reporting and tracking procedures for setting cost and schedule commitments, and monitoring progress throughout the entire life cycle of the SLS Program (through at least 2030).

Status: NASA has re-examined and revised its life-cycle review policies to ensure greater transparency into cost tracing and estimating and to enhance existing reporting practices for external stakeholders. Progress has been made for all major programs, particularly the SLS Program. After successfully completing an independently reviewed Operational Readiness Review (ORR) in September 2021, SLS brought the ORR data forward to the Decisional Authority (NASA Associate Administrator) to reach KDP-E, effectively transitioning into the operations phase of their life cycle for the SLS Block 1. As part of the KDP-E Operational Readiness Review requirements, five-year operational cost estimates were developed for steady state production and operations costs. These include labor, indirect costs, and variable costs such as procurement long-lead materials, production lead times, and minor development/obsolesce. This five-year rolling estimate is applicable to production and operations of the Block 1 variant for Artemis II and beyond. Excluded from the five-year rolling estimate are the major upgrades for Block 1B, Block 2, and restart/recertification of RS-25 production line.

In October 2023, SLS successfully completed the SLS EUS + CAPS upgrades supporting Block 1B KDP-C milestone decision gate, which established an ABC for the SLS Block 1B approved by the Decision Authority. Additionally, within the already noted life-cycle approach, SLS plans to establish a separate ABC for SLS Block 2 no earlier than six months following the Block 2 Preliminary Design Review, currently slated for June 2025. The Agency will seek to close this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 15, 2024

17. Report: Audit of NASA's Development of Its Mobile Launchers (IG-20-013; 3/17/2020)

Recommendation: (3) Ensure life-cycle and milestone reviews incorporate programmatic and technical risks and are conducted with the Associate Administrator for Human Exploration and Operations Mission Directorate and other senior Agency officials.

Status: The EGS program is preparing for the next KDP-C in the life cycle for the ML-2, which will include setting an ABC. A JCL analysis that incorporates both programmatic and technical risk is being performed and will be used to inform the ABC. This milestone will take place spring 2024. The Agency will seek to close this recommendation after the ABC is established and ML-2 is approved at an Agency Program Management Council by the Decision Authority (NASA Associate Administrator) to proceed into phase C of its life cycle.

Separately, an ABC was approved for the following capability upgrades and programs in fall 2023: SLS Block 1B EUS + CAPS, the Gateway Program initial capability, and for the HLS initial capability.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: June 30, 2024

18. **Report: Audit of NASA's Development of Its Mobile Launchers** (IG-20-013; 3/17/2020)

Recommendation: (4) Require the ML-2 project to develop an ABC separate from the EGS Program.

Status: The EGS program is preparing for the next KDP for the ML-2, which will include setting an ABC covering both cost and schedule. Construction on the ML-2 began in August 2023 and is progressing to be ready for Artemis IV. As of 2022, the EGS Program started reporting a yearly five-year operational cost estimate for the ML-1 costs; the next update is anticipated spring 2024. The Agency will seek to close this recommendation after the ABC is set and ML-2 is approved to proceed into phase C of its life cycle.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: June 30, 2024

19. **Report: NASA's Management of the Orion Multi-Purpose Crew Vehicle Program** (IG-20-018; 7/16/2020)

Recommendation: (2) To the extent practicable, adjust the production schedules for Artemis IV and V to better align with the successful demonstration of Artemis II to reduce schedule delays associated with potential rework.

Status: An update to the Artemis mission planning manifest is currently under way to include the new mission dates announced on January 9, 2024, for Artemis II and Artemis III. Artemis IV and V mission readiness and related production schedules will be assessed in the FY 2026 budget formulation process and used to inform the Agency budget submission. A request for extension will be submitted to align with FY 2026 President's budget release.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: February 28, 2025

20. **Report: NASA's Planetary Science Portfolio** (IG-20-023; 9/16/2020)

Recommendation: (2) In coordination with the Office of Chief Financial Officer, engage relevant Centers and technical capability leaders to identify budgetary and accounting system solutions within the current budgetary and full cost accounting system to adequately fund and sustain critical technical discipline capabilities needed to support current and future projects.

Status: SMD has been formulating a coordinated response across the OCFO and other parties per recent guidance from the OIG. SMD is expanding on its previous work towards implementation of the OIG's corrective action and closure of this recommendation.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: July 22, 2024

21. Report: Audit of NASA's Compliance with the Geospatial Data Act (IG-21-001; 10/2/2020)

Recommendation: (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.

Status: SMD is continuing to support the OCIO in its efforts to develop the implementation plan and specific details for geospatial management to support missions across NASA.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: October 30, 2024

22. Report: NASA's Management of Its Acquisition Workforce (IG-21-002; 10/27/2020)

Recommendation: (1) Finalize and fully implement the performance metrics dashboard to measure acquisition performance.

Status: In October 2023, NASA rolled out the Metrics Dashboards. This includes procurement metrics, NASA At A Glance, Contract Performance Assessment Reporting System (CPARS), Contracting Benchmarks, Procurement Administrative Lead Time (PALT), and many others. The functionality for contract assignments for Contracting Officers (CO) and Contracting Officer's Representatives (COR) is under contract and the planned pilot is scheduled for May 2024. OP will coordinate with the CPMO to address the Program Manager requirement.

Office of Primary Responsibility: Office of Procurement

Target Completion Date: May 30, 2024

23. Report: NASA's Management of Its Acquisition Workforce (IG-21-002; 10/27/2020)

Recommendation: (2) Document contract assignments to COs, CORs, and program/project managers in a centralized system for inclusion in the performance metrics dashboard.

Status: In October 2023, NASA rolled out the Metrics Dashboards. This includes procurement metrics, NASA At A Glance, CPARS, Contracting Benchmarks, PALT, and many others. The functionality for contract assignments for COs and CORs is under contract and the planned pilot is scheduled for May 2024. OP will coordinate with the CPMO to address the Program Manager requirement.

Office of Primary Responsibility: Office of Procurement

Target Completion Date: May 30, 2024

24. **Report: NASA's Management of the Gateway Program for Artemis Missions** (IG-21-004; 11/10/2020)

Recommendation: (2) Ensure PPE and HALO delivery and launch dates are realistic by including sufficient schedule margin in their development schedules.

Status: The Gateway Program transitioned from formulation to implementation after a successful KDP-I held in July 2023. The baseline development schedules for PPE and Habitation and Logistics Outpost (HALO) were taken into consideration in the Gateway Initial Capability KDP-I. The Gateway Program successfully completed a JCL analysis in support of setting its ABC that was approved by the Decisional Authority (NASA Associate Administrator). The Agency will request closure for this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: July 31, 2023

25. **Report: NASA's Management of the Gateway Program for Artemis Missions** (IG-21-004; 11/10/2020)

Recommendation: (3) Develop a HEOMD policy that establishes a reasonable amount of recommended schedule margin by phase of program or project.

Status: The establishment of the M2M Program Office under the leadership of the Exploration Systems Development Mission Directorate has enabled NASA to improve our approach to implementing our architecture by strengthening our integration and risk management across the programs. In order to document the new governance structure and successfully accomplish our missions, the M2M Implementation Plan development is in work to document the programmatic and management functions associated with the effective implementation of M2M in support of Artemis mission. Specifically, as it relates to this recommendation, schedule management and schedule margin will be addressed in the M2M Schedule Management Implementation Plan.

Previously, the ACD Schedule Management Plan formalized the processes and procedures necessary to manage the Artemis Mission Schedules throughout the Artemis missions' design, development, and execution phases. The ACD Schedule Management Plan was published in July 2022 and the process within was validated with the successful implementation of JCL analysis informing the Gateway Program KDP-C and HLS' KDP-C. Related KDP documentation and decision memos were released in January 2024 to the OIG. The completion and approval of the M2M Schedule Implementation Plan will be used to request closure of this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: August 31, 2024

26. Report: NASA's Efforts to Mitigate the Risks Posed by Orbital Debris (IG-21-011; 1/27/2021)

Recommendation: (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.

Status: Mitigating orbital debris continues with U.S. Government-wide implementation of the White House National Orbital Debris Research and Development plan and broad use by domestic regulators of the NASA-updated U.S. Government Orbital Debris Mitigation Standard Practices. Internationally, NASA experts brief United Nations forums annually on the debris environment and encourage adherence to international debris mitigation guidelines. We will proceed to close out this recommendation.

Office of Primary Responsibility: Office of International and Interagency Relations

Target Completion Date: June 30, 2022

27. Report: NASA's Efforts to Mitigate the Risks Posed by Orbital Debris (IG-21-011; 1/27/2021)

Recommendation: (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.

Status: Mitigating orbital debris continues with U.S. Government-wide implementation of the White House National Orbital Debris Research and Development plan and broad use by domestic regulators of the NASA-updated U.S. Government Orbital Debris Mitigation Standard Practices. Internationally, NASA experts brief United Nations forums annually on the debris environment and encourage adherence to international debris mitigation guidelines. We will proceed to close out this recommendation.

Office of Primary Responsibility: Office of International and Interagency Relations

Target Completion Date: June 30, 2022

28. Report: NASA's Efforts to Mitigate the Risks Posed by Orbital Debris (IG-21-011; 1/27/2021)

Recommendation: (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.

Status: NASA has invested in methods and technologies for removing defunct spacecraft. Selected relevant current investments include: 1) Small Business Innovation Research - ongoing investments in main line, Ignite, and Sequentials sub-programs cover many orbital debris areas; 2) Small Satellite Technology - several ongoing investments including autonomous collision avoidance, propulsion, and debris inspection; 3) Space Technology Research Grants - just-in-time collision avoidance and space-laser-based remediation concepts and graduate research in debris mitigation, tracking, and characterization; 4) Tech Demo Missions - On-orbit Servicing, Assembly, and Manufactoring-1 - Rendezvous, proximity operations, and capture of a (controlled) non-prepared (legacy) spacecraft, including sensors, computer vision, robotics and tools (a full list of the STMD orbital debris investments (FY 2022-2024) can be provided). NASA's Office of Technology, Policy, and Strategy is currently conducting a Cost and Benefit Analysis of Orbital Debris Remediation. The study is complete through Phase I and Phase II is under way.

Office of Primary Responsibility: Space Technology Mission Directorate

Target Completion Date: January 31, 2024

29. Report: NASA's Construction of Facilities (IG-21-027; 9/8/2021)

Recommendation: (1) Develop and institute an Agency-wide process to prioritize and fund institutional and programmatic Construction of Facilities (CoF) projects that align with Agency-level missions and require business case analyses to be completed and considered as part of the process prior to the projects' approval.

Status: OSI is currently re-writing the NPR 8810.1A, Center Master Planning. The re-write of the NPR 8810.1A will address the recommendation as it will reflect the prioritization process that was approved along with the Agency Master Plan in October 2023.

Office of Primary Responsibility: Office of Strategic Infrastructure

Target Completion Date: December 30, 2024

30. Report: NASA's Construction of Facilities (IG-21-027; 9/8/2021)

Recommendation: (2a) Revise NASA Procedural Requirements 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.

Status: NASA updated NPR 8820.2H, Facility Project Requirements (Updated with Change 1), which added Section 1.4, *Cost Sharing of CoF Renewal Projects* and 2.2.6.1, *Cost-Sharing Discussion for Renewal Projects*. In addition, NPR 8820.2H (Updated with Change 1) added a reference to the newly added section 1.4 in Section 1.2.2, *Renewal (also known as Recapitalization) Projects* and Section 1.6.2, *Agency CoF Program Management Responsibilities* as well as corrected the flowchart in Appendix I, *Local and/or Program Funded Project Flowchart*.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: January 16, 2024

31. Report: NASA's Management of the Artemis Missions (IG-22-003; 11/15/2021)

Recommendation: (1) Develop a realistic, risk-informed schedule that includes sufficient margin to better align Agency expectations with the development schedule.

Status: M2M Program maintains integrated mission schedules that are mature and informed by contractor milestones. Recently, M2M leveraged multiple sources of data, including known and emerging risks, to inform the new Artemis II launch readiness date. Following the completion of a preliminary schedule risk assessment, the M2M Program's continued to evaluate findings from the flight and ground testing which have led to additional work and scope required in support of Artemis II. NASA concluded that these items (e.g., Orion Heatshield) posed a large enough safety risk that the manifest date needed to move. Ensuring crew safety is the primary driver for the Artemis II schedule change. An update to the Artemis integrated schedules is under way to include the new mission dates announced on January 9, 2024, for Artemis II and Artemis III, which are in September 2025 and September 2026, respectively.

Information from the recent KDP-C life-cycle milestones for SLS EUS + CAPS (Block 1B), Gateway Program, and HLS is factored into the assessment for Artemis III and IV schedules. Related KDP documentation and decision memos were released in January 2024 to the OIG.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 30, 2024

32. Report: NASA's Management of the Artemis Missions (IG-22-003; 11/15/2021)

Recommendation: (3) Develop an Artemis-wide cost estimate, in accordance with best practices, that is updated on an annual basis.

Status: The Artemis implementation is unique from other NASA activities in that the flexible architecture is a guiding principle within the Artemis program, enabling NASA to adapt to changing requirements, leverage partnerships, and achieve sustainable and cost-effective human exploration of the Moon and beyond. By embracing flexibility and innovation, NASA aims to establish a robust infrastructure and lay the foundation for future exploration missions to Mars and beyond. The approach NASA is pursuing ensures that capabilities are developed to meet the needs of the architecture. These developments are consistent with NASA policy and follow the development process as documented in NASA command media (i.e., NPR 7120.5). NASA recognizes OIG's critical role in promoting Artemis accountability and transparency; however, imposing a flight-by-flight cost assessment as a benchmark on individual Artemis missions can potentially hinder the success, innovation, and long-term sustainability of space missions. A more balanced approach that considers both short-term cost containment and long-term mission objectives is essential for achieving meaningful and impactful exploration and scientific discovery in space.

NASA utilizes a range of management and reporting tools to ensure transparency and accountability at the mission level for all stakeholders. These tools include project-level cost and schedule JCL-informed development commitments (including for major developmental upgrades), independent review at major life-cycle reviews and associated KDPs, documented and configuration-controlled mission definition baselines, by-mission schedule risk assessments, life-cycle cost estimates in Phase E, five-year rolling estimates consistent with guidance provided in NPR 7120.5F, independent Agency financial auditing (including a twelfth consecutive unmodified clean finding in 2023), annual Agency budget requests, Agency-led baseline performance and major program reviews, independent reviews by the NASA Advisory Council and Aerospace Safety Advisory Panel, and multiple ongoing reviews from the governmental oversight entities. The Agency will request closure of this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

33. Report: NASA's Management of the Artemis Missions (IG-22-003; 11/15/2021)

Recommendation: (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.

Status: The Artemis implementation is unique from other NASA activities in that the flexible architecture is a guiding principle within the Artemis program, enabling NASA to adapt to changing requirements, leverage partnerships, and achieve sustainable and cost-effective human exploration of the Moon and beyond. By embracing flexibility and innovation, NASA aims to establish a robust infrastructure and lay the foundation for future exploration missions to Mars and beyond. The approach NASA is pursuing ensures that capabilities are developed to meet the needs of the architecture. These developments are consistent with NASA policy and follow the development process as

documented in NASA command media (i.e., NPR7120.5). NASA recognizes OIG's critical role in promoting Artemis accountability and transparency; however, imposing a flight-by-flight cost assessment as a benchmark on individual Artemis missions can potentially hinder the success, innovation, and long-term sustainability of space missions. A more balanced approach that considers both short-term cost containment and long-term mission objectives is essential for achieving meaningful and impactful exploration and scientific discovery in space.

NASA utilizes a range of management and reporting tools to ensure transparency and accountability at the mission level for all stakeholders. These tools include project-level cost and schedule JCL-level informed development commitments (including for major developmental upgrades), independent review at major life-cycle reviews and associated KDPs, documented and configuration-controlled mission definition baselines, by-mission schedule risk assessments, life-cycle cost estimates in Phase E, five-year rolling estimates consistent with guidance provided in NPR 7120.5F, independent Agency financial auditing (including a twelfth consecutive unmodified clean finding in 2023), annual Agency budget requests, Agency-led baseline performance and major program reviews, independent reviews by the NASA Advisory Council and Aerospace Safety Advisory Panel, and multiple ongoing reviews from the governmental oversight entities. The Agency will request closure of this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

34. Report: NASA's Management of the Artemis Missions (IG-22-003; 11/15/2021)

Recommendation: (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.

Status: The APMC met in November 2023 and evaluated the readiness of the HLS Program initial capability to proceed to Phase C of its life cycle as defined in NPR 7120.5F. The initial capability supports Artemis III, the first Artemis lunar landing mission. The Decisional Authority (NASA Associate Administrator) approved the HLS Program Initial Capability to enter Phase C and an ABC was established for cost and schedule.

The HLS Program revised the acquisition approach from Lunar Exploration Transportation Services to Sustaining Lunar Development (SLD), which led to the award of two Firm Fixed Price contracts under NextSTEP-2 Broad Area Announce: 1) SpaceX (Appendix H Option B) in November 2022 and 2) Blue Origin (Appendix P) in May 2023. Within the SLD acquisition approach, the HLS Program will establish a separate ABC for the sustaining capability (Appendix H Option B and Appendix P), which is an upgraded capability to support subsequent missions and a sustained presence on the lunar surface. The Agency will request closure for this recommendation.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 31, 2024

35. **Report: NASA's Management of the International Space Station and Efforts to Commercialize Low Earth Orbit** (IG-22-005; 11/30/2021)

Recommendation: (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.

Status: The International Space Station (ISS) Program continues to address this recommendation in accordance with the approved testing plan. Based on where the ISS team currently is with the investigation, an extension is needed and has been submitted to the OIG .

Office of Primary Responsibility: Space Operations Mission Directorate

Target Completion Date: January 31, 2025

36. **Report: NASA's Management of Its Astronaut Corps** (IG-22-007; 1/11/2022)

Recommendation: (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.

Status: The M2M Program Office under the leadership of the Exploration Systems Development Mission Directorate has enabled NASA to improve its approach to implementing architecture by strengthening integration and risk management across the programs. M2M has begun to document the governance structure. The M2M Implementation Plan and all of the associated plans are in work to document the programmatic and management functions associated with the effective implementation of M2M in support of Artemis missions. The plans are also being expanded to address humans in space. Crew safety is, and will remain, our top priority.

There are several implementation plans tied to the content of this recommendation, in particular, the M2M Mission Integration Implementation Plan will capture the M2M Flight Operations Implementation Plan. There are also governing documents established to capture the charters of supporting boards and panels. M2M, under Systems, Engineering, and Integration, is also tracking the overall review plan outlining the path to certification to flight readiness and post flight analysis which drive lessons learned for future missions.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: August 31, 2024

37. Report: NASA's Insider Threat Program (IG-22-009; 3/14/2022)

Recommendation: (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.

Status: OPS is piloting a NASA Insider Threat Working Group (InTWG). An overview of the new pilot concept of operations was established and authorized by the Associate Administrator. The InTWG pilot is anticipated to begin in February 2024 and run for one year.

Office of Primary Responsibility: Office of Protective Services

Target Completion Date: December 1, 2024

38. Report: NASA's Volatiles Investigating Polar Exploration Rover (VIPER) Mission (IG-22-010; 4/6/2022)

Recommendation: (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.

Status: In May 2023, the Exploration Science Strategy and Integration Office completed compiling a set of CLPS formulation lessons learned and is in the process of formally updating NASA's lessons learned data base.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: July 22, 2024

39. Report: NASA's Volatiles Investigating Polar Exploration Rover (VIPER) Mission (IG-22-010; 4/6/2022)

Recommendation: (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 Major Program Annual Report (MPAR) accordingly.

Status: In the letter response to the OIG recommendation, SMD completed its study on a reassessment of VIPER's cost estimates in late fall 2023. Those results were provided to the OIG, which requested SMD continue to work towards implementation of this corrective action. Resultingly, SMD, in coordination with OCFO, is reassessing appropriate paths forward in response to this recommendation.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: June 15, 2024

40. **Report: NASA's Cost Estimating and Reporting Practices for Multi-Mission Programs** (IG-22-011; 4/7/2022)

Recommendation: (3) Should NASA elect to estimate, track, and report life-cycle costs for major programs or activities that exceed $250 million by component rather than by mission, include estimates for each component in the MPAR and provide Congress a cost estimate, outside of the MPAR, for each Artemis mission currently planned, starting no later than Artemis III.

Status: The Artemis implementation is unique from other NASA activities in that the architecture is built to be flexible and meet M2M Objectives over the long run, not as a monolithic multi-decade implementation that has static requirements. Mission requirements are evolved based on Lessons Learned from previous missions and the missions downstream are designed to be flexible. The reason the Agency has implemented a process to update the architecture annually is to account for this feature. The process is built to ensure that gaps are identified and change the architecture if necessary to ensure the M2M Objectives are met.

The approach NASA is pursuing ensures that capabilities are developed to meet the needs of the architecture. These developments are consistent with NASA policy and follow the development process as documented in NASA command media (i.e., NPR 7120.5).

Office of Primary Responsibility: Office of the Chief Financial Officer

Target Completion Date: March 31, 2024

41. **Report: NASA's Cost Estimating and Reporting Practices for Multi-Mission Programs** (IG-22-011; 4/7/2022)

Recommendation: (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 programs and projects are required for the successful implementation of a mission; regardless of how those programs and projects are categorized (i.e., tightly coupled, single-project program, etc.).

Status: In NASA management response, the recommendation closure was determined to be demonstrated with the approval of ACD schedule management plan that formalized the process for accounting for integrated mission schedule. The ACD Schedule Management plan was published in July 2022. The ACD Schedule Management Plan process was validated with the successful implementation of JCL analysis informing Gateway Program KDP-C, HLS KDP-C, and SLS EUS + CAPS KDP-C. Decision Memos for each of these KDPs were released January 9, 2024.

Office of Primary Responsibility: Office of the Chief Financial Officer

Target Completion Date: March 15, 2024

42. **Report: NASA's Cost Estimating and Reporting Practices for Multi-Mission Programs** (IG-22-011; 4/7/2022)

Recommendation: (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 risks.

Status: With the release of ACD-50006, the Artemis Campaign Development Schedule Management Plan, on July 25, 2022, NASA formalized the inclusion of schedule risk assessments that include probabilistic analyses to identify margin and schedule risk to support management decisions and that capture interdependencies with or constraints to defined Artemis mission content. This content included in the Schedule Management Plan meets the intent of the best practices white paper. Recognizing Artemis is the only NASA campaign of missions that currently needs to consider global, interdependent risks as relating to specific missions, NASA determined that associated updates to the NASA Space Flight Program and Project Management Handbook is not applicable. A request for closure was submitted to OIG and is under consideration by the OIG.

Office of Primary Responsibility: Chief Program Management Officer

Target Completion Date: December 31, 2023

43. **Report: NASA's Management of the Mobile Launcher 2 Contract** (IG-22-012; 6/9/2022)

Recommendation: (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.

Status: EGS and M2M Headquarters personnel participated in a two-month Integrated Baseline Review of EGS's ML-2 development, culminating in face-to-face meetings with Bechtel in December 2023. The team reviewed ML-2 control accounts and schedules and participated in interviews with Bechtel Control Account Managers. The results of this review will inform the upcoming setting of an ML-2 ABC.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: June 30, 2024

44. **Report: NASA's Management of the Mobile Launcher 2 Contract** (IG-22-012; 6/9/2022)

Recommendation: (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.

Status: The EGS program is preparing for the next KDP-C in the life cycle for the ML-2, which will include setting an ABC. A JCL analysis is being performed and will be used to inform the ABC. This milestone will take place spring 2024. The Agency will

seek to close this recommendation after the ABC is established and ML-2 is approved to proceed into phase C of its life cycle.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: June 30, 2024

45. Report: NASA's Management of the Mobile Launcher 2 Contract (IG-22-012; 6/9/2022)

Recommendation: (3a) To the extent that some or all of the Bechtel contract is converted to a fixed-price contract, ensure that the Critical Design Review has been completed in accordance with NASA's life-cycle policies prior to conversion.

Status: The EGS Program completed the CDR Step 1 (Hardware and Programmatic) in accordance with NPR 7120.5 and NPR 7123.1 in January 2024. The follow-on CDR Step 2, which will cover ground support equipment software and system-level validation and verification, will take place spring 2024. A request for closure will be submitted once the CDR has been fully closed out, anticipated for fall 2024.

The Agency has elected to defer the decision on converting the existing contract with Bechtel to a firm-fixed price (FFP) for the foreseeable future.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: September 30, 2024

46. Report: NASA's Management of the Mobile Launcher 2 Contract (IG-22-012; 6/9/2022)

Recommendation: (3b) To the extent that some or all of the Bechtel contract is converted to a fixed-price contract, ensure that an IGCE is established before entering into any new contractual agreements.

Status: The Agency has elected to defer the decision on converting the existing contract with Bechtel to an FFP for the foreseeable future. Given that the Agency has decided to not pursue an FFP transition at this time, there is no opportunity to establish of a new independent government cost estimate (IGCE). NASA would like to offer other means of reasonable assurance that future contract work will continue to follow Federal Acquisition Regulation (FAR) and NASA FAR supplement regulations. A request for closure will be submitted.

Office of Primary Responsibility: Exploration Systems Development Mission Directorate

Target Completion Date: March 15, 2024

47. Report: NASA's Management of the Earth Science Disasters Program (IG-22-013; 6/14/2022)

Recommendation: (1) Establish and document Program management requirements in a strategic plan and/or NPR 7120.8A project plan format for consistent messaging on ESDP priorities, objectives, and quantifiable performance metrics.

Status: SMD is in the process of establishing and documenting program management requirements in a strategic plan and potentially an NPR 7120.8, NASA Research and Technology Program and Project Management Requirements, Project Plan to help ensure consistent messaging on Earth Science Disasters Program (ESDP) priorities, objectives, and quantifiable performance metrics.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: May 31, 2024

48. **Report: NASA's Management of the Earth Science Disasters Program** (IG-22-013; 6/14/2022)

Recommendation: (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.

Status: SMD is performing 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 and project plans.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: September 30, 2024

49. **Report: NASA's Management of the Earth Science Disasters Program** (IG-22-013; 6/14/2022)

Recommendation: (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.

Status: ESDP reviewed options across NASA internally; specifically, OGC, Office of Interagency and International Relations, SMD Policy Branch, and other members of the SMD. In addition, discussions were held with the Federal Emergency Management Agency and the National Guard Bureau who liaises with state Offices of Emergency Management. ESDP determined while reimbursement is authorized by those provisions, it is not mandated. Further, the Federal Emergency Management Authority holds the ultimate decision for determining the requisitioned services to be approved for reimbursement and direct support from entities from state, territory, tribal, local government, and private nonprofits are given priority in awarding funds.

Office of Primary Responsibility: Science Mission Directorate

Target Completion Date: January 25, 2024

50. **Report: NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2021** (IG-22-014; 6/28/2022)

    Recommendation: (3) Complete the OMB data call process for all programs with outlays over $10 million.

    Status: To address this recommendation, the Agency reported on all programs that have $10+ million in annual outlays in the Payment Integrity Information Act (PIIA) data call.

    The Agency briefed NASA OIG on this approach and is expecting closure of this recommendation at the conclusion of the current PIIA compliance audit in May 2024.

    Office of Primary Responsibility: Office of the Chief Financial Officer

    Target Completion Date: May 31, 2024

51. **Report: NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2021** (IG-22-014; 6/28/2022)

    Recommendation: (4) Ensure that program outlays exclude any transactions that do not meet the outlay definition provided by OMB.

    Status: To address this recommendation, the Agency enhanced its risk assessment process to the use of evaluating gross outlays.

    The Agency has briefed NASA OIG on this approach and is expecting closure of this recommendation at the conclusion of the current PIIA compliance audit in May 2024.

    Office of Primary Responsibility: Office of the Chief Financial Officer

    Target Completion Date: May 31, 2024

52. **Report: NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2021** (IG-22-014; 6/28/2022)

    Recommendation: (5) Revise the materiality risk calculation methodology and sampling and estimation methodology plan to include payment transactions only.

    Status: To address this recommendation, the Agency made further enchantments to the risk assessment process by evaluating gross outlays for both the materiality risk calculation and sampling and estimation methodology.

    The Agency has briefed NASA OIG on this approach and is expecting closure of this recommendation at the conclusion of the current PIIA compliance audit in May 2024.

    Office of Primary Responsibility: Office of the Chief Financial Officer

    Target Completion Date: May 31, 2024

53. Report: NASA's Compliance with the Payment Integrity Information Act for Fiscal Year 2021 (IG-22-014; 6/28/2022)

Recommendation: (7) Develop a detailed review process, such as a checklist or job aid, outlining the review procedures performed by the Quality Assurance Division within the reporting process for overpayments from sources other than recapture audits to ensure that the primary reviewer and the supervisory quality control reviewers are performing a thorough review of the aggregated submissions of overpayments. Necessary review steps include ensuring overpayments are not reported twice, capturing issues with overpayments submitted for the incorrect period, and tracking identified and collected portions that occur in different fiscal years for accurate reporting.

Status: To address this recommendation, the Agency developed detailed internal guidance. This is internal guidance has been broadly disseminated among the NASA Quality Assurance community as a part of the FY 2024 PIIA cycle.

The Agency has briefed NASA OIG on this approach and has provided a copy of developed internal guidance. The Agency is expecting closure of this recommendation at the conclusion of the current PIIA compliance audit in May 2024.

Office of Primary Responsibility: Office of the Chief Financial Officer

Target Completion Date: May 31, 2024

54. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (1) Conduct cyclical reviews (no less than every 5 years) of the Ames lease process to ensure compliance with federal and NASA requirements.

Status: NPR 8800.15C has been updated to address the recommendation cited in this audit. Currently, the NPR is in the review cycle at the NASA leadership level and OSI is expecting routing and approval to be completed within the next few months.

Office of Primary Responsibility: Office of Strategic Infrastructure

Target Completion Date: June 30, 2024

55. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (2) Update applicable real estate policies and NASA-wide guidance to enhance requirements and procedures to comply with Enhanced Use Lease (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.

Status: NPR 8800.15C has been updated to address the recommendation cited in this audit. Currently, the NPR is in the review cycle at the NASA leadership level and OSI is expecting routing and approval to be completed within the next few months.

Office of Primary Responsibility: Office of Strategic Infrastructure

Target Completion Date: June 30, 2024

56. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (3) Update applicable real estate policies and NASA-wide guidance to enhance requirements and standardize applicable financial practices (such as benefit and cost analysis, life-cycle cost analysis, and audits of tenants' books and records when required) associated with leases.

Status: NPR 8800.15C has been updated to address the recommendation cited in this audit. Currently, the NPR is in the review cycle at the NASA leadership level and OSI is expecting routing and approval to be completed within the next few months.

Office of Primary Responsibility: Office of Strategic Infrastructure

Target Completion Date: June 30, 2024

57. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (4) Update applicable real estate policies and NASA-wide guidance to incorporate applicable security requirements and agreement clauses in leases.

Status: NPR 8800.15C has been updated to address the recommendation cited in this audit. Currently, the NPR is in the review cycle at the NASA leadership level and OSI is expecting routing and approval to be completed within the next few months.

Office of Primary Responsibility: Office of Strategic Infrastructure

Target Completion Date: June 30, 2024

58. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (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.

Status: NPR 8800.15 is still in review with OSI. OSI provided a brief update to the Center Operations Integrators in December 2023. Additional comments were requested from Centers and Center Directors regarding the Real Property Accountable Officer (RPAO), competition, compliance with Federal and NASA requirements, and OSI updates to the Code of Federal Regulations. This is a potential topic at a Mission Support Program Management Council meeting.

Office of Primary Responsibility: Ames Research Center

Target Completion Date: September 30, 2024

59. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (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.

Status: Ames Research Center (ARC) Protective Services Office (PSO) is not sufficiently staffed to complete this assessment by June 2025. ARC PSO advised prior to, during, and after the audit, that additional subject-matter expertise (SME) support would be required to complete a Center-wide security vulnerability risk assessment of this magnitude. ARC management committed to providing funds for a term full-time equivalent (FTE) with the required SME skills that PSO could dedicate to performing this assessment. To date, no funding has been received for this term FTE. ARC PSO, with its limited SME, is working to complete elements of this assessment for the Moffett Federal Airfield and NASA Research Park (NRP) in 2024. Elements of this assessment for the Ames Campus and Eastside could begin in 2025 contingent upon completion of the Airfield and NRP. Completion of the full assessment is contingent upon OPS having sufficient resources (personnel and funding).

Office of Primary Responsibility: Office of Protective Services

Target Completion Date: June 30, 2027

60. Report: Ames Research Center's Lease Management Practices (IG-22-015; 8/4/2022)

Recommendation: (10) Identify and implement mitigation strategies and resource requirements to address security vulnerability assessment risks.

Status: ARC PSO has identified minimum required mitigation strategies for the NRP and provided that information to ARC management. To date, studies and design work have been initiated but nothing has been implemented. A contributing factor impacting completion of this action is ARC management having not reached a decision on their desired end state for an "open campus" environment in the NRP. Implementation of identified minimum mitigation strategies and required mitigation strategies from the assessment is contingent upon both a defined end state for "open campus" and the OPS having sufficient resources (personnel and funding).

Office of Primary Responsibility: Office of Protective Services

Target Completion Date: June 30, 2027

61. Report: NASA's Compliance with the Geospatial Data Act for Fiscal Year 2022 (IG-23-001; 10/5/2022)

Recommendation: (1) Ensure the role of the Senior Agency Official for Geospatial Information (SAOGI) is strategically positioned within the Agency to have responsibility, accountability, and authority needed to meet Geospatial Data Act (GDA)-assigned agency responsibilities.

Status: Since the NASA OIG audit, OCIO has maintained reporting compliance in accordance with GDA mandates; however, the OCIO has not initiated the coordination with SMD and OSI for the assessment of the strategic placement of the NASA SAOGI.

Since the audit recommendations required the organizational assignment and designation of the SAOGI to ensure the responsibility, accountability, and authority needed to meet the GDA-assigned Agency responsibilities were strategically placed, OCIO felt participation from the Chief Data Officer (CDO) was critical. The CDO, who had been filling the SAOGI role, left the Agency at the time of the audit, resulting in a delay with completing the recommendation in the original time frame.

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: June 28, 2024

62. **Report: NASA's Compliance with the Geospatial Data Act for Fiscal Year 2022** (IG-23-001; 10/5/2022)

Recommendation: (2) Ensure roles and responsibilities of the SAOGI and other key stakeholders are defined in both the Geospatial Data Strategy and its implementation plan.

Status: The CDO initiated leadership decisions within OCIO and will lead collaboration with the other impacted NASA organizations. Unfortunately, due to these challenges, we have not engaged with stakeholders as originally intended. An extension will enable us to coordinate and ensure alignment before proposing corrective action.

The Agency decision in question holds significant implications for our organization's long-term growth and success. Given its magnitude, it is crucial that we allocate the necessary time to thoroughly evaluate strategic placement and make well-informed recommendations that will effectively position the NASA SAOGI.

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: June 28, 2024

63. **Report: NASA's Compliance with the Geospatial Data Act for Fiscal Year 2022** (IG-23-001; 10/5/2022)

Recommendation: (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.

Status: The CDO and the SMD will collaborate on the development of a unified geospatial data management plan across NASA. OLIA is assisting in the effort to ensure alignment with Geospatial Data Act of 2018 and Federal Geographic Data Committee objectives.

Office of Primary Responsibility: Office of the Chief Information Officer

Target Completion Date: September 30, 2024

64. **Report: NASA's Compliance with the Geospatial Data Act for Fiscal Year 2022** (IG-23-001; 10/5/2022)

    Recommendation: (4) Ensure continued coordination with National Archives and Records Administration (NARA) to establish the appropriate level of scientific data for inclusion in NARA-approved records schedules.

    Status: Since the NASA OIG audit, OCIO has proposed internal retention rules for scientific data disposition in collaboration with SMD. The OCIO reorganization and operational issues with NARA's new system, ERA 2.0, have caused delays in completing this recommendation. The OCIO is proposing a nine-month extension to finalize our coordination with NARA to establish NARA-approved records schedules for scientific data.

    Office of Primary Responsibility: Office of the Chief Information Officer

    Target Completion Date: June 28, 2024

65. **Report: Review of NASA's Space Technology Mission Directorate Portfolio** (IG-23-005; 12/19/2022)

    Recommendation: (1) Reexamine its SPAR data system to ensure it provides as accurate and complete a picture of project costs as is practicable.

    Status: STMD has completed reexamination of its STMD Portfolio Analysis Resource (SPAR) data system to ensure it provides as accurate and complete a picture of project costs as is practicable. The following corrective actions have been taken: 1) For historical data, STMD has updated the process to pull in budget information from the official systems of record twice a year, 2) It has been noted in STMD procedures that SPAR should not be used for funding projections as SPAR does not contain embargoed data.

    Office of Primary Responsibility: Space Technology Mission Directorate

    Target Completion Date: January 31, 2024

66. **Report: Review of NASA's Space Technology Mission Directorate Portfolio** (IG-23-005; 12/19/2022)

    Recommendation: (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.

    Status: STMD has completed its update of the STARPort data system with complete information on project alignment to Strategic Technology Architecture Roundtable (STAR) desired outcomes for all projects active in FY 2021 and beyond. As of the end

of FY 2023, all active projects have been mapped to outcomes. STMD will continue to map new investments to their associated outcomes on a regular basis.

Office of Primary Responsibility: Space Technology Mission Directorate

Target Completion Date: January 31, 2024

67. Report: Review of NASA's Space Technology Mission Directorate Portfolio (IG-23-005; 12/19/2022)

Recommendation: (3) Complete efforts to develop additional outcome-based performance measures based on the transition, advancement, and infusion of technologies.

Status: STMD has completed efforts to develop additional outcome-based performance measures based on the transition, advancement, and infusion of technologies. STMD has transitioned all metrics of early-stage technologies to outcome-based metrics and has added new metrics to cover the entirety of STMD's early-stage portfolio. We continue to work across the Mission Directorate to improve performance metrics and remain committed to implementing outcome-based metrics across STMD.

Office of Primary Responsibility: Space Technology Mission Directorate

Target Completion Date: January 31, 2024

Appendix C
Reconciliation of Agency Records with NASA OIG Semiannual Report and GAO's Database of Open Recommendations

Reconciliation with NASA OIG's Fall 2023 Semiannual Report Public Reports and Recommendations Open for One Year or More (As of 12/31/2023)		
	Reports	**Recommendations**
Total Open Public Reports and Recommendations as of 9/30/23 in Table 3 of OIG's Fall 2023 Semiannual Report [a]	**31**	**94**
Less: Open Public Reports and Recommendations in Table 3 Issued Between 1/1/23 and 3/31/23 [b]	(3)	(24)
Net Public Reports and Recommendations Open One Year or More in Table 3	**28**	**70**
Less: Public Reports and Recommendations in Table 3 Closed Between 10/1/23 – 12/30/23 [c]	(1)	(3)
Total Public Reports and Recommendations Open One Year or More as of 12/31/2023 per Agency Records	**27**	**67**

[a] Table 3, "Audit Recommendations Yet to be Implemented, Previous Semiannual Report" of NASA OIG's semiannual report can be found at https://oig.nasa.gov/docs/SAR-2023-FALL.pdf

[b] Reports IG-23-004, 9 recommendations; IG-23-008, 6 recommendations; and IG-23-010, 9 recommendations.

[c] Report IG-21-006, recommendations 5 and 7. Recommendation 1 of report IG-21-004 was also closed; however, recommendations 2 and 3 are still open so this report is not considered closed.

Reconciliation with GAO's Database of Open Recommendations Public Reports and Recommendations Open for One Year or More (As of 12/31/2023)		
	Reports	**Recommendations**
Total Open Public Reports and Recommendations per Database of Open Recommendations [a]	**21**	**43**
Less: Open Public Reports and Recommendations Issued Between 1/1/23 and Present [b]	(3)	(4)
Total Public Reports and Recommendations Open One Year or More as of 12/31/2023 per Agency Records	**18**	**39**

[a] GAO's Database of Open Recommendations provides status only as of the date of query. NASA queried the database January 22, 2024. The database is located at https://www.gao.gov/reports-testimonies/recommendations-database.

[b] Reports GAO-24-106225, 1 recommendation; GAO-24-105658, 1 recommendation; and GAO-24-105980, 2 recommendations.

Appendix D
Glossary of Acronyms

Acronym	Description
3D	Three Dimensional
ABC	Agency Baseline Commitment
ACD	Artemis Campaign Division
ACPM	Artemis Campaign Planning Manifest
ADR	Active Debris Removal
AEPS	Advanced Electric Propulsion System
AFR	Agency Financial Report
APMC	Agency Program Management Council
APS	Application and Platform Service
ARC	Ames Research Center
CAPS	Associated Capabilities
CDO	Chief Data Officer
CDR	Critical Design Review
CFT	Crew Flight Test
CLPS	Commercial Lunar Payload Services
CO	Contracting Officers
COC	Conflict of Commitment
CoF	Construction of Facilities
COR	Contracting Officer's Representative
CPARS	Contract Performance Assessment Reporting System
CPMO	Chief Program Management Officer
CY	Calendar Year
DAAC	Distributed Active Archive Centers
DCD	Design, Construction, and Demolition
DDT&E	Design Development Test and Evaluation
EGS	Exploration Ground Systems
EM-2	Exploration Mission 2
ESDIS	Earth Science Data and Information System
ESDP	Earth Science Disasters Program
EUL	Enhanced Use Lease
EUS	Exploration Upper Stage
EUS + CAPS	EUS and its Associated Capabilities
EVM	Earned Value Management
EVMS	Earned Value Management System
FAIR	Findability, Accessibility, Interoperability, and Reusability
FAR	Federal Acquisition Regulation
FFP	Firm- Fixed Price
FTE	Full-Time Equivalent
FY	Fiscal Year
GAO	Government Accountability Office

Acronym	Description
GDA	Geospatial Data Act
GIC	Gateway Initial Capability
HALO	Habitation and Logistics Outpost
HEOMD	Human Exploration and Operations Mission Directorate
HLS	Human Landing System
iCDR	Integrated Critical Design Review
IGCE	Independent Government Cost Estimate
InTWG	Insider Threat Working Group
ISS	International Space Station
IT	Information Technology
JCL	Joint Cost and Schedule Confidence Level
KDP	Key Decision Point
M2M	Moon to Mars
ML-1	Mobile Launcher 1
ML-2	Mobile Launcher 2
MPAR	Major Program Annual Report
MSR	Mars Sample Return
NARA	National Archives and Records Administration
NASA	National Aeronautics and Space Administration
NDS	NASA Docking System
NHPA	National Historic Preservation Act
NICE	National Initiative for Cybersecurity Education
NISAR	NASA-ISRO Synthetic Aperture Radar
NOJMO	NASA Office of Jet Propulsion Laboratory Management and Oversight
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
NRP	NASA Research Park
OCE	Office of the Chief Engineer
OCFO	Office of Chief Financial Officer
OCIO	Office of the Chief Information Officer
OCOMM	Office of Communications
OGC	Office of the General Counsel
OIG	Office of Inspector General
OLIA	Office of Legislative and Intergovernmental Affairs
OMB	Office of Management and Budget
OP	Office of Procurement
OPS	Office of Protective Services
ORR	Operational Readiness Review
OSI	Office of Strategic Infrastructure
OSTP	Office of Science and Technology Policy

Acronym	Description
PALT	Procurement Administrative Lead Time
PIIA	Payment Integrity Information Act
PPE	Power and Propulsion Element
PSO	Protective Services Office
RPAO	Real Property Accountable Officer
SAOGI	Senior Accountable Official for Geospatial Information
SI	Scientific Integrity
SLD	Sustaining Lunar Development
SLS	Space Launch System
SMD	Science Mission Directorate
SME	Subject-Matter Expert
SPAR	STMD Portfolio Analysis Resource
SRA	Schedule Risk Analysis
STAR	Strategic Technology Architecture Roundtable
STMD	Space Technology Mission Directorate
SWOT	Surface Water and Topography
TO	Task Orders
VIPER	Volatiles Investigating Polar Exploration Rover