

NASA

National Aeronautics and Space Administration

Office of Inspector General

Office of Audits

AUDIT OF NASA'S HISTORIC PROPERTY

October 22, 2018

Report No. IG-19-002





Office of Inspector General

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RESULTS IN BRIEF

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IG-19-002 (A-17-016-00)

WHY WE PERFORMED THIS AUDIT

Since its creation in 1958, NASA programs have been responsible for advancements in space exploration, scientific research, and aeronautics. Through the years, these activities have produced numerous items of historical significance, large and small, that played a vital role in the Agency's achievements. NASA's historical assets can be broadly classified as either historic real property (e.g., buildings, structures, and test sites) or historic personal property (e.g., cameras, spacesuits, and mission logs). NASA continues to use most of this historic real property for current projects while also maintaining what are known as "heritage assets," which include real and personal property that no longer serve a mission purpose but have historical, cultural, educational, or aesthetic significance. Failure to appropriately preserve or account for this property may result in the loss of irreplaceable property with great historical value to NASA and the country.

For the past 8 years, the Office of Inspector General (OIG) has identified aging infrastructure and facilities as a top management challenge for NASA. Continuing our oversight in this area, we initiated this review to assess NASA's management of its historic real and personal property, including the processes the Agency uses to identify and account for such property, the challenges the Agency faces in managing historic property, and the extent to which historic real property is being used in ongoing Agency missions. To complete this audit, we reviewed relevant federal laws and regulations, NASA policies and procedures, and applicable lease agreements; interviewed NASA officials and contractors; and benchmarked with the Smithsonian Institution regarding its process for retaining historic property.

WHAT WE FOUND

NASA's processes for loaning and disposing of historic personal property have improved over the past 6 decades, but a significant amount of historic personal property has been lost, misplaced, or taken by former employees and contractors due to the Agency's lack of adequate procedures. Reclaiming this historic property has proven challenging because of the significant effort required to find the property as well as the Agency's reluctance at times to assert an ownership claim over the items. In addition, past efforts to recover historic personal property have been thwarted by NASA's poor record keeping and a lack of established processes for timely coordination of recovery efforts. For example, poor record keeping contributed to the Agency losing possession of an Apollo 11 lunar collection bag that contained lunar dust particles. In other cases, NASA's delay or reluctance in asserting ownership of an item has led to missed opportunities to retrieve historical property. For example, a U.S. Air Force historian noticed what he thought was a NASA prototype Lunar Rover Vehicle in a residential neighborhood in Alabama and reported his sighting to NASA, who then referred the information to the OIG. The OIG contacted the individual in possession of the rover, who expressed interest in returning the vehicle to NASA. The OIG requested NASA assert ownership of the rover and, if appropriate, make plans to accept it as a donation; however, after waiting more than 4 months for a decision from the Agency, the individual sold the rover to a scrap metal company. NASA officials subsequently offered to buy the rover, but the scrap yard owner refused and, realizing its historical value, sold the vehicle at auction for an undisclosed sum.

We also found that NASA does not have adequate processes in place to identify or manage its heritage assets, which are predominantly personal property. First, the Agency has not adequately defined the roles and responsibilities of Agency officials responsible for identifying and managing such assets. None of the personnel from the two Centers we visited—Ames Research Center (Ames) and Kennedy Space Center (Kennedy)—could explain who was responsible for originally designating heritage assets or why an item was designated. Moreover, while NASA has procedures to address the management of heritage assets, we found these procedures are often in conflict with other procedures, are vague, and do not adequately describe the processes intended to identify and preserve the assets. In addition, we found that NASA may not be the most appropriate entity to manage certain heritage assets. For example, the Agency categorizes 815 pieces of art work as heritage assets, the majority of which remain in storage rather than on display at NASA Centers because maintaining the correct temperature, humidity, and lighting to ensure their proper preservation can be costly. Transferring these assets to an outside organization, such as the Smithsonian Institution, would allow the art to be more effectively preserved and displayed.

In contrast with its management of historic personal property and heritage assets, NASA has strong internal controls for managing historic real property, including leasing some of this property to external entities under the National Historic Preservation Act (NHPA). However, we found the Agency could more effectively manage funds generated from its two current NHPA lease agreements at Ames. Under NHPA, proceeds from historic real property leases must be used to maintain, repurpose, or refurbish other NASA historic facilities listed on the National Register of Historic Places (National Register). NASA policy limits where funds from NHPA leases may be used, requiring that the funds generally be first offered to the Center that generated the lease. While this policy makes sense when that Center can use those funds for mission-critical historic properties, the policy can also result in NASA renovating facilities that lack a mission use. For example, rather than using funds generated from Ames' lease of Moffett Airfield to help maintain one of the Agency's more than 240 facilities listed on the National Register that supports a NASA mission, Ames is planning to use the funds to refurbish a historic building on the Center that it hopes to lease to an external tenant. However, Ames has not identified any prospective tenants with mission-specific collaboration efforts that would offset the cost of the renovations. In our view, NASA policy should be revised to permit proceeds generated from NHPA leases to be used on historic properties at any NASA facility that furthers the Agency's mission.

Finally, we identified improvements NASA can make in its procedures for securing debris collected from the Space Shuttle Challenger and Columbia disasters and loaning artifacts from Columbia to aerospace and educational entities for research purposes.

WHAT WE RECOMMENDED

To improve the NASA's management of historic personal property, heritage assets, Space Shuttle artifacts, and funds generated from NHPA leases, we made five recommendations to NASA: (1) develop a process to more effectively identify, validate ownership of, and coordinate within NASA and/or other federal agencies on the recovery of historic property; (2) develop comprehensive procedures for identifying and managing heritage assets; (3) evaluate and justify the existing list of NASA- and contractor-held heritage assets to determine whether the Agency is the most effective owner and what property should be retained; (4) ensure Space Shuttle Columbia and Challenger artifact agreements are signed, appropriately updated, and include all necessary loan terms, including a security plan developed by the borrower and reviewed by Kennedy's Office of Protective Services; and (5) ensure NASA policies and procedures for using the proceeds from facilities leased under NHPA appropriately align with Agency goals.

We provided a draft of this report to NASA management who concurred with three of our five recommendations. We consider management's comments to Recommendations 1, 3, and 4 responsive; therefore, those recommendations are resolved and will be closed upon verification and completion of the proposed corrective actions. Management partially concurred with Recommendation 2 and did not concur with Recommendation 5. These recommendations will remain unresolved pending further discussions with the Agency.

For more information on the NASA Office of Inspector General and to view this and other reports visit <http://oig.nasa.gov/>.

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Acronyms

FASAB	Federal Accounting Standards Advisory Board
GSA	General Services Administration
NACA	National Advisory Committee for Aeronautics
NHPA	National Historic Preservation Act
NID	NASA Interim Directive
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
OCFO	Office of the Chief Financial Officer
OIG	Office of Inspector General
OMB	Office of Management and Budget
SFFAS	Statement of Federal Financial Accounting Standards

INTRODUCTION

Since its creation in 1958, NASA missions, programs, and projects have been responsible for advancements in space exploration, scientific research, and aeronautics. Through the years, these activities have produced numerous assets of historical significance, large and small. While some of these assets have been permanently retained by NASA, the Smithsonian Institution, other educational organizations, and private collectors, others have been misplaced, taken, or disposed.

NASA's historical assets can be broadly classified as either real property (e.g., buildings, structures, and test sites) or personal property (e.g., cameras, spacesuits, and mission logs). The Agency uses most historic real property for current projects while maintaining other real and personal property that no longer serves a mission purpose but has historical, cultural, educational, or aesthetic significance. Failure to appropriately preserve or account for this property may result in the loss of irreplaceable assets with great historical value to NASA and the country.

For the past 8 years, we have identified NASA's aging infrastructure and facilities as a top management challenge. Continuing our oversight in this area, we initiated this review to assess the Agency's management of its historic real and personal property, including the processes it uses to identify and account for such property, the challenges the Agency faces in managing its historic property, and the extent to which historic real property is being used in ongoing NASA missions. See Appendix A for details on the audit's scope and methodology.

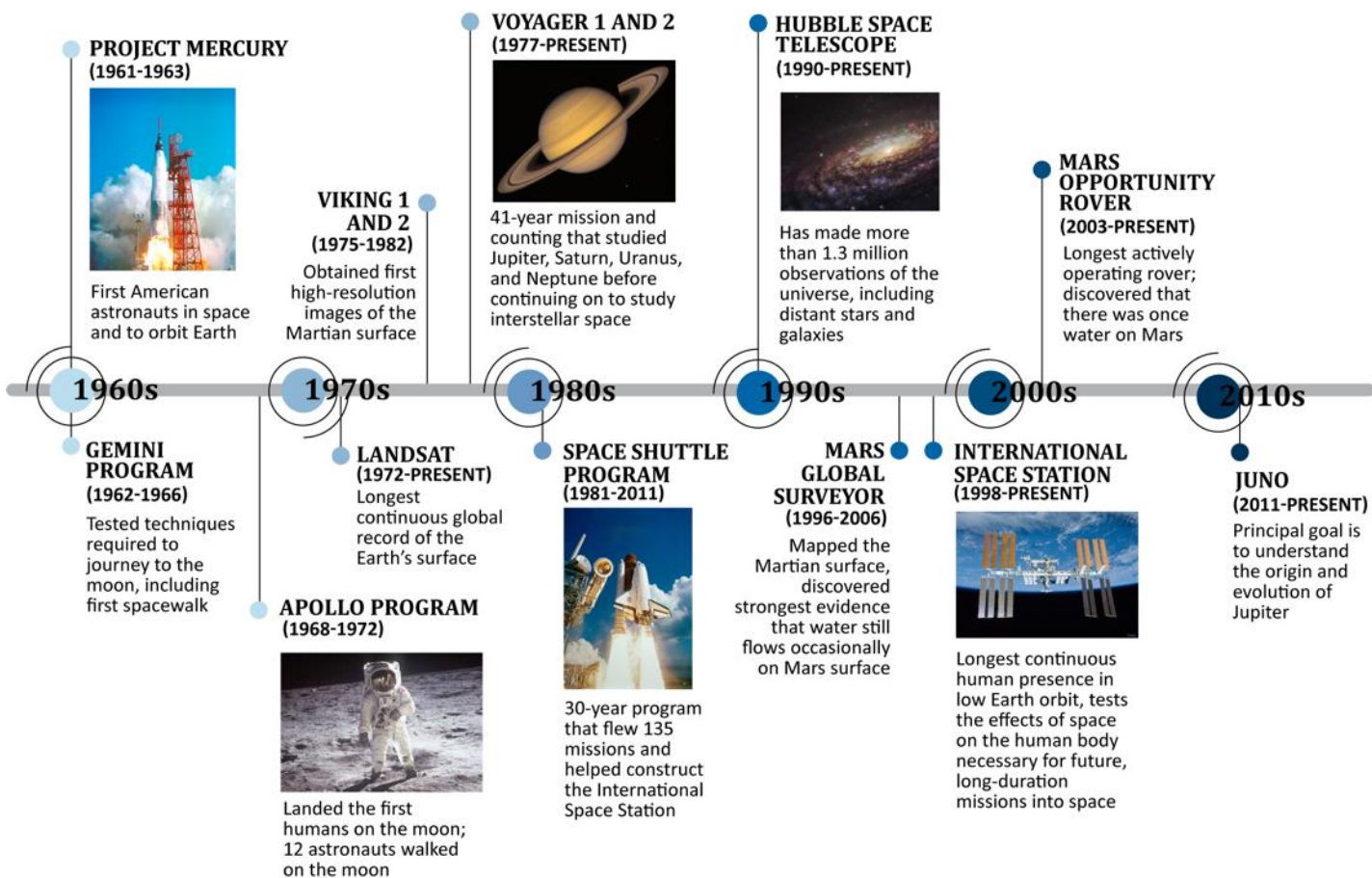
Background

When NASA was created in July 1958 upon enactment of the National Aeronautics and Space Act, the Agency subsumed many of the responsibilities and facilities of the National Advisory Committee for Aeronautics (NACA), including three facilities known today as Ames Research Center (Ames), Glenn Research Center, and Langley Research Center.¹ Along with these facilities also came numerous real and personal property assets that helped shape U.S. aviation and paved the way for human space exploration, including wind tunnels, test stands, and engine research facilities. As NASA has grown over the ensuing years, so too has the number of historic real and personal property the Agency is responsible for maintaining. Today, NASA's footprint includes its Headquarters in Washington, D.C.; 10 Centers and other test and research facilities located across the United States; and several component installations around the world. All told, NASA controls approximately 5,000 buildings and structures of which more than 80 percent are over 40 years old, with more than 600 of these facilities considered to have historical significance.

¹ The National Aeronautics and Space Act of 1958, Pub. L. No. 85-568 (1958). NACA was founded in 1915 to "jumpstart" U.S. research into aviation shortly after the start of World War I.

Over the past 6 decades, NASA missions, programs, and projects have advanced science and fundamentally enhanced life on Earth. From the Agency’s initial forays into space with Project Mercury and the Gemini program in the 1960s, to a year-long stay on the International Space Station, to deploying robots to explore the surface of Mars, to launching communication and weather satellites, NASA has inspired generations. Figure 1 highlights several of the Agency’s many missions, programs, and projects.

Figure 1: Sample of Major NASA Missions, Programs, and Projects Through the Years



Source: NASA Office of Inspector General (OIG) presentation of NASA information.

Executing these missions, programs, and projects has generated numerous historical assets, many of which played a vital role in the Agency’s achievements. These assets range from a model of a NASA wind tunnel, to art work, to spacecraft such as the Space Shuttle Atlantis, to buildings and structures that have unique architectural characteristics.

Federal Preservation Requirements

A variety of federal regulations, executive orders, and other guidance govern how NASA maintains and preserves the Agency's real and personal property for historical and educational purposes. While well-established federal guidance exists regarding preservation of historic real property, including the National Historic Preservation Act of 1966 (NHPA) and two executive orders, guidance for historical personal property is limited to accounting and reporting requirements found in the Statement of Federal Financial Accounting Standards (SFFAS) 29, which is issued by the Federal Accounting Standards Advisory Board (FASAB).²

National Historic Preservation Act

NHPA established the primary regulations governing how federal agencies should manage historic property.³

Section 101 established the National Register of Historic Places (National Register), which is comprised of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture.

Section 106 directed all federal agencies to consider and record the effects of their actions on historic properties and to consult with interested parties, including the respective state's historic preservation office, relevant Indian tribes and native Hawaiian organizations, and other concerned parties, on planned actions.

Unitary Plan Wind Tunnel at Ames Research Center



In 1949, Congress passed the Unitary Plan Act requiring, among other things, a national plan for constructing facilities to support the aerospace research infrastructure needs of NACA, as well as the U.S. Air Force, private industry, and universities.

Source: NASA.

² The Federal Property Management Regulations do not address historically significant personal property, while the Code of Federal Regulations only establishes requirements for identifying and retaining historically significant archaeological property (i.e., remains of past human life or activities such as tools, basketry, rock carvings, and structures) more than 100 years old. SFFAS 29 also covers real property.

³ National Historic Preservation Act, Pub. L. No. 89-665 (1966). Historic preservation includes identification, evaluation, recordation, documentation, curation, acquisition, protection, management, rehabilitation, restoration, stabilization, maintenance, research, interpretation, conservation, and education and training related to these activities. In this report, we use "historic" as a general descriptive term that does not necessarily track with requirements in NHPA.

Section 110 directed federal agencies to use historic property to the maximum extent possible, consistent with an agency’s mission. Federal agencies are (1) advised to designate a qualified preservation officer, (2) directed to locate and inventory historic properties and give preference to the use of those properties for mission purposes, and (3) directed to implement a historic preservation program that identifies and manages those properties, complies with Section 106, and interacts with an agency’s management systems to ensure that historic preservation issues are considered in agency decision making. Before historic property can be disposed, federal agencies must document its historical and architectural significance and provide these records to the Library of Congress.

Section 111 established guidelines for leasing historic property. Specifically, federal agencies can transfer or lease surplus federally owned historic property as long as the property is preserved. An agency also may retain the lease proceeds to defray costs for maintaining other historical property listed on the National Register with any surplus proceeds required to be deposited into the U.S. Treasury.

Executive Orders

In addition to federal regulations, several presidents have issued executive orders governing the preservation of historic property.

Executive Order 13287.⁴ Signed in March 2003 and known as “Preserve America,” Executive Order 13287 directs federal officials to preserve America’s heritage through active advancement of the protection, enhancement, and contemporary use of historic properties owned by the federal government. Executive Order 13287 also reemphasized existing requirements for assessing the status of agency-controlled historic properties, management needs for preserving these properties, and suitability of these properties for contributing to community economic development initiatives.

Executive Order 13327.⁵ Signed in February 2004 and known as “Federal Real Property Asset Management,” Executive Order 13327 directs federal agencies to designate a senior real property officer to manage an agency’s historic real property. This official is also required to annually provide the Director of the Office of Management and Budget (OMB) and the Administrator of the General Services Administration (GSA) a list describing an agency’s real property.

Vehicle Assembly Building at Kennedy Space Center



Constructed in 1965, the Vehicle Assembly Building (VAB) is one of the largest single-story buildings in the world. The VAB was originally built to support the stacking of the Saturn V Rocket, and was later used to mate the Space Shuttle Orbiter with the solid rocket booster and external tanks. The interior of the VAB is comprised of four cells within the high bay area.

Source: NASA.

⁴ Exec. Order No. 13287, 68 Fed. Reg. 10635, *Preserve America* (March 3, 2003).

⁵ Exec. Order No. 13327, 69 Fed. Reg. 5897, *Federal Real Property Asset Management* (February 4, 2004).

Statement of Federal Financial Accounting Standards 29

Requirements governing the accounting and reporting of historical property are found in SFFAS 29, which directs federal agencies to report on the number of “heritage assets” they maintain. The Secretary of the Treasury, OMB Director, and Comptroller General of the United States established FASAB in October 1990 to promulgate accounting standards for the federal government. In accordance with SFFAS 29, a federal agency is required to annually report in its financial statements the number and major categories of heritage assets it preserves and note the methods of acquisition and condition of the property.⁶

NASA’s Historic Preservation Efforts for Personal Property

NASA takes a leading role in the national effort to inspire interest in science, technology, engineering, and mathematics through its unique missions, workforce, facilities, research, and innovations. Retention of historic personal property enables NASA to create exhibits, loan assets to other entities, and inspire students and adults by using personal property to tangibly illustrate NASA’s accomplishments. Moreover, retention of such personal property helps preserve the Agency’s history for future generations.

If NASA determines that personal property no longer supports its mission but has historical significance, the Agency can preserve this property for educational purposes. In addition, if NASA determines that another entity could more effectively use this property, multiple options exist for the Agency to loan or dispose of assets:

- NASA Headquarters and Centers can loan items to other NASA Centers, schools, museums, and other entities with the expectation that the items will be returned at a later date.⁷
- NASA can loan historically significant items to contractors under special circumstances.⁸ For example, at Kennedy Space Center (Kennedy), Delaware North Companies, Inc. (Delaware North) manages the Kennedy Space Center Visitor Complex and maintains a significant amount of NASA-furnished property, including Space Shuttle Atlantis.
- NASA can dispose of assets by following the Agency’s artifact identification and disposal procedure after first offering it to other NASA Centers and the Smithsonian Institution’s National Air and Space Museum.⁹ If none of these parties are interested, NASA can then offer the asset to schools, museums, or other state-sponsored entities. Once NASA transfers ownership, the Agency’s agreement requires the new owner to give NASA the right of first refusal if they want to dispose of the asset, generally within the first 5 years of ownership.

⁶ Government financial statements are published annually and provide a comprehensive overview of the federal government’s finances.

⁷ NASA Procedural Requirements (NPR) 4200.1H, *NASA Equipment Management Procedural Requirements* (March 8, 2017).

⁸ NPR 4500.1, *Administration of Property in the Custody of Contractors* (February 24, 2014).

⁹ NPR 4310.1A, *Artifact Identification and Disposition* (May 12, 2014). NASA defines an artifact as a unique object or item of personal property that may be representative of the history of the science and technology of aeronautics and astronautics. An artifact’s significance and interest stems mainly from its relation to the following: historic flights, programs, activities, or incidents; achievements or improvements in technology; understanding of the universe; and important or well-known personalities. The Smithsonian’s National Air and Space Museum maintains the world’s largest collection of historic aircraft and spacecraft. In this report, we use “artifact” as a general descriptive term that does not necessarily track to NASA’s definition.

- Historic personal property can also be disposed through the GSA’s regular excess property disposal process.¹⁰ Under these rules, the items would first be made available to other federal entities, then to state and local organizations, and finally to the general public. If none of these parties are interested, the item may be destroyed.

NASA’s Historic Preservation of Real Property

NASA’s Cultural Resource Manager at Headquarters is responsible for ensuring compliance with NHPA and Executive Order 13287, as well as preserving the Agency’s architectural and archeological assets.¹¹ As mandated by NHPA, every 3 years NASA reports to the Advisory Council on Historic Preservation regarding the Agency’s progress in identifying, protecting, and using historic properties, including identifying, refurbishing, and demolishing historic property.¹² Information for this reporting is derived from each Center’s cultural resource manager, who is responsible for identifying and assessing real property for listing on the National Register. In compliance with NHPA, Center cultural resource managers are responsible for coordinating actions that significantly affect historic real property eligible for or listed on the National Register with the Advisory Council on Historic Preservation, the state historic preservation officer, and other stakeholders.

Preservation and Restoration of NASA Historic Real Property

Much of NASA’s historic real property is used by current Agency programs, either in its original state or after repurposing it to serve alternate uses. However, prior to any significant modifications, proposed changes to historic real property must undergo a review process and be approved to ensure the property maintains its historic characteristics. In addition to NASA internal reviews, state historic preservation officers and other stakeholders must be consulted.

NASA is also responsible for maintaining historic property no longer needed, but must prioritize active facilities needed to fulfill current and future missions given its limited facilities budget. To ensure the Agency remains in compliance with NHPA, several Centers have sought other sources of funding for restoration and preservation efforts. For example, Ames regularly leases historic properties such as Moffett Field and other property adjoining the Center, using the proceeds from these agreements to help maintain Center infrastructure and renovate other historic property at the Center.¹³

¹⁰ NPR 4300.1C, *NASA Personal Property Disposal Procedural Requirements* (June 27, 2013).

¹¹ Architectural resources generally include real property such as buildings, test stands, and launch pads; however, these resources can also include large assets that are considered historically significant, such as rockets, equipment, and airplanes.

¹² The Advisory Council on Historic Preservation is an independent federal agency that advises the President and Congress on matters relating to historic preservation.

¹³ Moffett Field was constructed in 1930s to support U.S. Navy helium-filled rigid airships. As part of its base realignment and closure process, the U.S. Navy transferred Moffett Field to NASA in July 1994.

Disposal of NASA Historic Real Property

After determining that a specific piece of historic real property no longer serves a useful purpose, NASA is permitted to demolish the structure or facility. However, before doing so, NASA is required by NHPA to document the history of the property, a process that can include photographs and videos that describe the significance of the property to NASA's history and mission. According to NASA officials, this process can require a significant level of research, including outreach and coordination with other preservation stakeholders, which can be resource intensive. Once this process is complete, NASA must provide a copy of the documentation to the Library of Congress.

Although NASA has the legal authority to dispose of its unused and unneeded real property, political and community concerns can present a challenge to such efforts. Notable examples include a massive hangar at Ames' Moffett Field and test stands at the Santa Susana Field Laboratory near Los Angeles, California. In each case, even though NASA met the NHPA requirement to document the properties' historical significance, the Agency ultimately delayed or cancelled its plans to dispose of the property due to external pressure.

Mission Control Center for the Mercury and Apollo Missions



The control room of this national landmark was moved to the Kennedy Visitor Complex as part of the mitigation measures prior to demolition of the landmark.

Source: NASA.

Located at Moffett Field, Hangar One was built in the 1930s to house the naval airship USS Macon and is one of the world's largest freestanding structures, covering approximately 8 acres. Hangar One and many of the surrounding buildings are listed on the National Register; as such, they are protected by NHPA. In 2012, NASA determined that it no longer needed Moffett Field and Hangar One to meet mission requirements and notified Congress of its intent to excess the property.¹⁴ This plan was met with significant resistance from the local community, and ultimately, in 2015, Moffett Field was leased to Planetary Ventures, a subsidiary of Alphabet, Inc.¹⁵ As a requirement in the lease, Planetary Ventures is responsible for re-siding Hangar One after the original siding was removed by the Navy in 2011 as part of an effort to mitigate polychlorinated biphenyls contamination.¹⁶

¹⁴ Letter from NASA Administrator Charles Bolden to U.S. House Representative Anna Eshoo on April 6, 2012.

¹⁵ In 2015, Google, Inc. became a subsidiary of Alphabet, Inc.

¹⁶ NASA OIG, *NASA's Hangar One Re-Siding Project* (IG-11-020, June 22, 2011). According to the Environmental Protection Agency, polychlorinated biphenyls have been demonstrated to cause cancer as well as a variety of other adverse health effects on the immune system, reproductive system, nervous system, and endocrine system.

In another example, NASA is required to remediate environmental contamination at the Santa Susana Field Laboratory, which encompasses 2,850 acres in the Simi Hills of Ventura County, California, approximately 30 miles northwest of downtown Los Angeles.¹⁷ First opened in 1948 in what was then a remote area, the facility was for many years the site of research efforts on civilian use of nuclear energy by the Department of Energy and rocket testing for defense and space exploration by NASA and the U.S. Air Force. Over the years, these activities resulted in radiological and chemical contamination of the site's soil and groundwater of which NASA is partially responsible for remediating. As part of this effort, NASA planned to demolish the rocket engine test stands at the facility. However, the site also contains the Burro Flats Painted Cave, a unique example of prehistoric Native American art that was declared a sacred site by the Santa Ynez Band of Chumash Indians. The Chumash Indians requested that several of the test stands be retained as a testament to the history of the site and sought to have it designated as a national monument. As a result of the tribe's efforts and at the request of several members of Congress, NASA deferred demolition of all of the test stands unless they pose a risk to safety, human health, or the environment.

Burro Flats Painted Cave Art



Source: NASA.

¹⁷ NASA OIG, *NASA's Environmental Remediation Efforts at the Santa Susana Field Laboratory* (IG-13-007, February 14, 2013).

NASA LACKS ADEQUATE PROCEDURES TO MANAGE HISTORICALLY SIGNIFICANT PERSONAL PROPERTY

NASA uses historic personal property both to educate the public on its programs and accomplishments and to preserve its history for future generations. However, while Agency processes for loaning and disposing of historic personal property have improved since the Mercury, Gemini, and Apollo eras, a significant amount of personal property from those eras has been lost, misplaced, or taken by former employees and contractors due to the Agency's lack of adequate procedures. Moreover, the lack of documentation clearly identifying ownership coupled with the lack of a standard process for managing the recovery of historically significant personal property further exacerbates the problem. As a result, unique and irreplaceable personal property with great historical value to NASA and the United States may be lost to future generations.

Past NASA Practices Led to Confusion over Ownership and Impeded Recovery of Historic Personal Property

During the Mercury, Gemini, and Apollo missions of the 1960s and 1970s, NASA freely gave property as gifts to astronauts and other employees and contractors. However, much of this property had not yet been deemed historical and no legal mechanism or process existed for this type of transfer. Over time, this "gifted" property began to appear for sale at auctions and on the Internet, and NASA occasionally sought to reclaim the property because of its historical significance. Tensions between NASA and former astronauts possessing this property led Congress to enact a statute in 2012 that provided astronauts full ownership of personal property acquired during their participation in Mercury, Gemini, or Apollo missions.¹⁸ Further, during the Mercury, Gemini, and Apollo eras, NASA generally maintained poor records when transferring artifacts to other organizations.¹⁹ Although NASA has improved its processes for transferring and loaning historical property to outside entities in recent years, decades of no procedures and lax recordkeeping resulted in the loss of artifacts with significant historical importance. Moreover, the Agency has had limited success in recovering historic personal property even when later identified.

¹⁸ An Act to Confirm Full Ownership Rights for Certain United States Astronauts to Artifacts from the Astronauts' Space Missions, Pub. L. No. 112-185 (2012).

¹⁹ NASA requirements direct the length of record retention, which may have impacted NASA's ability to provide records.

NASA's Process for Reclaiming Historic Personal Property Needs Improvement

Reclaiming historic personal property that has been lost, stolen, or gifted over the years has proven challenging due to the significant effort required to find the property, as well as the Agency's reluctance at times to assert an ownership claim over the property. In addition, NASA commonly has not kept records indicating it is the legal owner of historic property, particularly with regard to items from the Mercury, Gemini, and Apollo eras. Initially, the Agency must identify historic personal property for potential recovery, a task that often involves the NASA Office of Inspector General (OIG). NASA and the OIG identify potential property to recover through a number of methods: individuals report a sighting of NASA property seemingly in the wrong hands; auction houses contact NASA to determine the authenticity of and legality of selling property in its possession; news outlets report on NASA property; or OIG law enforcement agents identify property through the course of their investigations, including proactive reviews of Internet auction sites.

As part of the historical personal property recovery process, NASA's Office of General Counsel must determine whether the Agency has legal standing to assert an ownership claim. To make this determination, Office of General Counsel staff contact the Exhibits Manager in the Headquarters Office of Communications to determine from which Center or program the item originated and, if possible, the employee to whom the property was originally assigned. For NASA to pursue legal action to recover an item, the Agency must convince the U.S. Attorney's Office in the jurisdiction where the item resides to assert NASA's interest in the property. On multiple occasions, the OIG's efforts to pursue recovery of an asset have been met with a lack of interest on NASA's part and a lack of established processes or senior decision-making authority for determining whether to seek recovery of historic personal property.

In addition, some past efforts to recover historic personal property have been thwarted by NASA's poor recordkeeping and a lack of established processes for timely coordination of recovery efforts. These issues ultimately contributed to the Agency's inability to retrieve lost, stolen, or gifted artifacts. In cases of theft, the OIG can seize historic property during a criminal case. NASA may also seek to recover the item under a civil action brought by the Department of Justice. In the past, the OIG has spent years working on such cases only for NASA to ultimately retract its interest in the return of the property or for the court to decide the existing owner had rightful possession of the property.

For example, poor recordkeeping contributed to NASA losing possession of an Apollo 11 lunar collection bag that contained lunar dust particles. According to court records, in 2003 the bag was seized by the Federal Bureau of Investigation from the home of a former Chief Executive Officer for the Kansas Cosmosphere and Space Center during a criminal investigation. A federal judge authorized the U.S. Marshalls Service to sell the bag, and in 2015, a private citizen purchased the bag at a government auction for \$995 and subsequently provided the bag to NASA to verify its authenticity. In April 2016, NASA officials confirmed the bag had flown on Apollo 11; consequently, the Agency retained the bag and filed suit to reestablish custody. However, in December

Apollo 11 Mission Lunar Collection Bag



Lunar collection bag from NASA's first manned mission to the Moon on Apollo 11.

Source: Sotheby's.

2016, a federal judge ruled the sale was legitimate and the purchaser was the legal owner. NASA subsequently returned the bag to the individual, and in July 2017, the bag sold at auction for \$1.8 million.

In another case, three command module hand controllers that steered the Apollo 11 spacecraft were appropriately removed, labeled as NASA property, and stored in an office safe at Johnson Space Center (Johnson). According to the former NASA employee who managed the safe, prior to his retirement in 1985 he asked his supervisor what to do with the controllers and was told to throw them out; however, he instead took the three controllers home. Years later, the former employee sold the controllers at auction to a collector of space memorabilia. When NASA learned of the sale, it sought return of the controllers to replace the mockup controllers that were on display at the Smithsonian National Air and Space Museum.²⁰ After 3 years, NASA discontinued its pursuit of the items.

Apart from pursuing legal action to recover an artifact, NASA can also ask the current owner to voluntarily return the property to NASA or request the artifact be donated to a museum with a provision that the individual or family be mentioned in the display or provided other compensation. NASA has experienced limited success recovering property via these options. During its attempts to retrieve the three Apollo 11 controllers, the OIG became aware that the former employee had also retained a command module translation handle from the Apollo 9 spacecraft that was used to steer and provide abort capabilities. The former employee voluntarily returned the handle, after which NASA transferred it to the Smithsonian to be included in an existing display.

Apollo 11 Mission Controller



Source: RR Auction.

Apollo 9 Mission Handle



Source: NASA OIG.

²⁰ Officials at Johnson, the original user of this property, expressed no interest in reclaiming the controllers; however, Headquarters officials pressed for return of the items.

In another case, a former Johnson engineer notified the OIG that an Omega Speedmaster Professional watch—a model NASA selected to use in space during Space Shuttle missions—was being auctioned in London, England, in December 2014. Because of NASA’s poor recordkeeping, it was not clear if this watch was actually flown during a Space Shuttle mission; however, the watch was in the possession of German astronaut Reinhard Furrer at the time of his death.²¹ An official from NASA’s Office of General Counsel stated the watch was NASA’s property, so the OIG pursued return of the item. However, the person in possession of the watch, who resided in the Netherlands, stated that Dutch law supported his ownership and he declined to return it. The OIG coordinated with the Department of Justice’s European Litigation Division, which ultimately paid approximately \$2,300 for return of the watch. Upon its return, NASA transferred the watch to the Smithsonian for display.

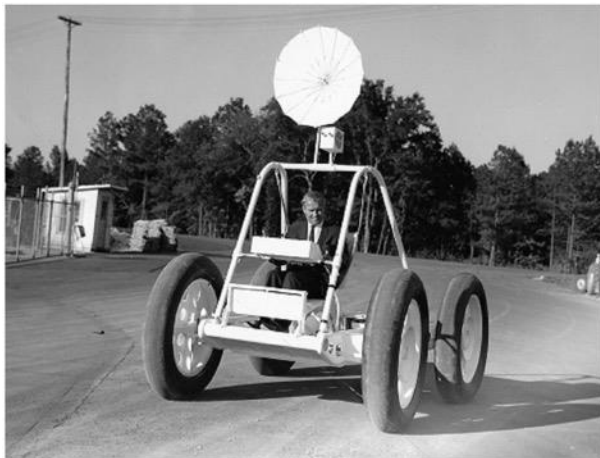


NASA’s reluctance or delay in asserting ownership of an item has led to missed opportunities to retrieve historical property. For example, in 2014, a U.S. Air Force historian noticed what he thought was a NASA prototype Lunar Rover Vehicle in a residential neighborhood of Blountsville, Alabama, and reported his sighting to NASA, who then referred the information to the OIG (see Figure 2). The OIG contacted the individual in possession of the rover, who expressed interest in returning the vehicle to NASA. The OIG requested that NASA assert ownership of the rover and, if appropriate, make plans to accept it as a donation. However, after waiting more than 4 months for a decision from NASA, the individual sold the rover to a scrap yard. NASA officials subsequently offered to buy the rover, but the scrap yard owner refused and, realizing the historical value of the rover, sold the vehicle at auction for an undisclosed sum.

²¹ Dr. Furrer flew as a payload specialist on the crew of STS-61A Challenger in 1985. This mission was the first to carry eight astronauts and the first in which payload activities were controlled from outside the United States. NASA provided the Speedmaster watches to astronauts starting in 1962 for use on space missions.

Figure 2: Historic Lunar Rover Prototype

Historic Photo of Lunar Rover Vehicle



Wernher von Braun, the first Marshall Space Flight Center Director, testing the rover.

2014 Photo of Lunar Rover Vehicle



Photo of the rover as discovered on private citizen's property.

Sources: NASA (left photo); U.S. Air Force (right photo).

NASA, OIG, and Department of Justice personnel attempting to recover historic personal property often face a time-consuming, resource-intensive, and frequently frustrating process, with the lack of records substantiating NASA's ownership routinely the largest hurdle. In our view, NASA will continue to be thwarted in its attempts to recover historic personal property unless it develops criteria and a process for determining which items are sufficient to pursue, what NASA offices need to be involved, and who will make the decision to pursue property. Until NASA improves its processes, the Agency's approach to recovering significant items from its past will continue in a haphazard, inefficient, and ultimately unsuccessful manner.

NASA has Improved the Process for Transfers and Loans of Historic Personal Property

Starting in 2009, in anticipation of the end of the Space Shuttle program, NASA made improvements to its artifact identification and disposal process for the significant amount of Space Shuttle and other historic property no longer needed to support its missions.²² NASA first implemented an artifact identification and disposal process in 1999; however, this process lacked an effective method to identify and notify external organizations of available artifacts. Prior to 1999, personal property disposal policies did not address artifacts or historical property. Under the 2014 artifact disposal process, NASA requires program and project personnel to identify any personal property no longer needed for a mission but that possesses historical value as a potential artifact along with providing a narrative description of the item's historical significance, including whether it flew in space. A Logistics Management Division official then enters the artifact into the GSA-owned NASA artifact system.²³ The artifact is first made available for permanent transfer to other NASA entities and the Smithsonian. If these entities show no interest,

²² NPR 4310.1A.

²³ The GSA system, GSAXcess, is web-based and specific to NASA artifacts. The Headquarters Logistics Management Division provides policy and oversight for Agency-wide management of personal property, contract property, mail, and transportation.

the artifact is offered to other museums, educational entities, libraries, and planetariums that NASA has preapproved as capable of properly preserving artifacts. If entities are interested in the artifact, NASA's Artifact Working Group reviews the requests to determine which entity will receive the artifact.²⁴ The artifact disposal system maintains a record of the action taken, which helps address NASA's historical challenge of poor recordkeeping. Since NASA cannot maintain all historically significant property, this process enables the continued preservation of the property by permanently transferring it to other organizations for use in public displays or for other educational purposes. However, if the artifact is not wanted by outside entities, it is disposed of through the Agency's regular property disposal process.

For many years, NASA allowed Centers to arrange for loans of historic personal property to outside entities for indefinite periods of time without a standard loan agreement, ultimately leading to inconsistent loan practices across NASA. Agency officials recognized this deficiency and strengthened controls over the loan process by changing NASA's policy directive in 2013 and adding specific requirements in 2017.²⁵

Specifically, property is no longer loaned for an indefinite period of time and instead agreements must have defined loan periods not to exceed 4 years with a maximum of two 1-year extensions. The process also requires an annual inventory of loaned property to be conducted by the borrower and submitted to the NASA official responsible for property oversight. The borrower must self-certify that they have possession of the property. Finally, the process provides a standard loan agreement that Centers should use to ensure the terms of the loan are documented and communicated to the borrower. At the two Centers visited during this audit—Ames and Kennedy—we found officials generally were complying with these requirements. Further, both Centers were taking action on existing loans to conduct annual inventories and revise loan documents to retroactively apply, where necessary, the 4-year loan limitation.

Space Shuttle Endeavour



Workers preparing the Space Shuttle Endeavour for its grand opening ceremony at the California Science Center's Samuel Oschin Space Shuttle Endeavour Display Pavilion.

Source: NASA.

²⁴ The Artifact Working Group is chaired by the Logistics Management Division's Artifact Disposal Program Manager and co-chaired by the Office of Communications Exhibits Manager.

²⁵ NASA Policy Directive (NPD) 4200.1C, *Equipment Management* (July 31, 2013), and NPR 4200.1H.

NASA Reports on Heritage Assets but Lacks Adequate Identification and Management Processes

NASA lacks a process to adequately identify or manage the Agency’s heritage assets, which are predominantly personal property. In 2005, FASAB issued SFFAS 29 under which NASA and other federal agencies must annually report on property categorized by an agency as a “heritage asset.”²⁶ A heritage asset is property that is (1) no longer needed for mission purposes and (2) unique for its historical or natural significance; cultural, educational, or artistic importance; or significant architectural characteristics that an agency plans to preserve indefinitely.²⁷ According to SFFAS guidance, real and personal property listed on the National Register should be considered a heritage asset.²⁸ Each federal agency is required to report in its annual financial statements the number and major categories of heritage assets it preserves, additions and deletions from the prior year numbers, and the condition of the property. In NASA’s fiscal year 2017 financial statements, the Agency reported 1,730 heritage assets (see Table 1).

Table 1: Heritage Assets Reported in 2017 Financial Statements

Category	Number of Assets
Buildings and structures	10
Air and space displays and artifacts	672
Art and miscellaneous items	1,048
Total heritage assets	1,730

Source: NASA OIG presentation of Agency fiscal year 2017 financial statement data.

According to the NASA Office of the Chief Financial Officer (OCFO), Center personnel are responsible for identifying and managing heritage assets at their Centers and are expected to provide quarterly updates to the Headquarters OCFO. While all NASA Centers are required to submit quarterly reports on the number of heritage assets on hand, none of the Ames and Kennedy personnel responsible for this process could explain who was responsible for designating an item as a heritage asset or how or why an item was designated a heritage asset. Furthermore, Ames personnel could not identify who at the Center was responsible for making decisions regarding which assets are added or removed from the list; Kennedy personnel said they relegated this responsibility to a contractor and do not verify the designations made.²⁹

²⁶ SFFAB 29 revised and supplemented previously issued accounting standards.

²⁷ According to SFFAB 29, a heritage asset whose predominant use is in government operations should be labeled as a multi-use heritage asset. However, the accounting treatment of this type of heritage asset is similar to non-heritage assets.

²⁸ FASAB Technical Release No. 9, *Implementation Guide for Statement of Federal Financial Accounting Standards 29: Heritage Assets and Stewardship Land* (February 20, 2008).

²⁹ We met with officials from the Centers’ facility, logistics, and financial offices; the Headquarters Cultural Resource Management Officer and Exhibits Program Manager; and the Supply and Equipment Management Officer.

NASA Lacks Coordination between Offices and Clear Lines of Responsibility for Identifying and Justifying Heritage Assets

NASA has not adequately defined the roles and responsibilities of Agency officials responsible for identifying and managing heritage assets. Moreover, we found that existing procedures for heritage assets sometimes conflict with other Agency procedures.

Numerous Headquarters and Center offices are involved with the preservation of heritage assets. While program and project offices are the most knowledgeable as to what property has historical value, Logistics Management Division personnel are responsible for maintaining property records for heritage assets as well as excessing artifacts. The Headquarters Cultural Resources Management Manager oversees historic property listed on the National Register, which should also be identified as a heritage asset, while Headquarters and Center OCFOs report on heritage assets in the Agency's annual financial statements. However, none of the employees from these and other offices we met with during the course of this audit said it was their responsibility to identify or manage NASA's heritage assets. Headquarters OCFO personnel said they do not have the necessary expertise to determine whether property has historical significance in order to identify it as a heritage asset. The Headquarters Exhibits Manager stated that while his office works with Center personnel to identify property available to place on exhibit within NASA or at external sites, they do not make decisions regarding which items will be labeled as heritage assets. Similarly, Logistics Management Division personnel stated that although they manage property and equipment throughout the Agency, they are not responsible for identifying whether an asset should be deemed heritage. Finally, the Headquarters Cultural Resource Manager said that while their office focuses on complying with NHPA and managing actions taken to modify or demolish historical real property, the office has no significant involvement with identifying personal property as heritage assets across NASA.³⁰

Center officials we spoke with were equally confused about who is responsible for identifying heritage assets. Similar to Headquarters OCFO personnel, Center OCFO personnel said they do not have the mission operations or historical expertise to identify heritage assets. Instead, Center OCFO staff pointed to other Center personnel, such as a Center's cultural resource manager or appropriate program personnel, as responsible for identifying historically significant assets. However, the Ames and Kennedy cultural resource managers as well as program personnel said they were not involved with identifying heritage assets in accordance with SFFAS 29, but rather were responsible for ensuring NASA complied with NHPA.

Moreover, while NASA has procedures to address the management of heritage assets, we found these procedures are often in conflict with other procedures, are vague, and do not adequately describe the processes intended to identify and preserve assets. For example, while financial procedure indicates that Center cultural resource managers are responsible for identifying heritage assets, there is no such requirement in NASA's cultural resource management procedure.³¹ Prior to June 2017, the cultural resource management procedure only required the Headquarters Cultural Resource Manager to prepare reports on heritage assets for the Agency's annual financial statements. However, these reports were not prepared by the Headquarters Cultural Resource Manager.

³⁰ According to the Headquarters Cultural Resource Manager, NASA tracks all real property that is eligible or listed on the National Register as heritage assets per SFFAS 29.

³¹ NPR 9250.1C, *Property, Plant, and Equipment and Operating Materials and Supplies* (October 29, 2015) and NPR 8510.1A, *NASA Cultural Resources Management* (June 20, 2017).

In June 2017, NASA enhanced its cultural resource management procedure and identified Center Exhibits Program managers as responsible for identifying and managing heritage assets, with Center cultural resource managers providing assistance. Prior to April 2018, NASA's procedures on the Exhibits Program did not address heritage assets and remained silent about which office bears responsibility for identifying these items.³² We brought this issue to the attention of the Headquarters Exhibits Program Manager, who stated the Agency's exhibits procedure was being revised to better address heritage assets. Subsequently, the exhibits procedure was updated in April 2018, directing Center historians, exhibits managers, and property custodians to identify heritage assets and a Center's OCFO to approve recommendations. However, we question whether a Center's OCFO is the most appropriate approval authority because the office does not have the expertise to determine whether an item should be permanently maintained due to its significance to NASA operations and is not responsible for the funding needed to preserve heritage assets. In our judgement, NASA's guidance still does not adequately define a process to identify and manage heritage assets.

At the two Centers we visited, these procedural inconsistencies resulted in confusion about the roles and responsibilities regarding who identifies and manages heritage assets. For example, the Orion Crew Module was added to Kennedy's list of heritage assets in 2017 after being used on a test flight and placed on display at the Kennedy Space Center Visitor Complex. However, neither Center officials nor Delaware North (the concessionaire contractor who operates the Visitor Complex for NASA) could agree on who was responsible for adding the asset to the list. As required by NASA guidance, the Kennedy OCFO was coordinating with Center personnel to report to the Headquarters OCFO the number of heritage asset located at the Center.³³ According to Kennedy OCFO personnel, the Orion Crew Module was added to the list of heritage assets because Delaware North included the module in the contractor's quarterly assessment of heritage assets maintained at the Visitor Complex. Kennedy OCFO personnel explained that because they do not have the necessary expertise to determine the historic nature of an item and its significance to NASA operations, their office relies on Delaware North to make the determination of what items under its control should be considered heritage assets. However, Delaware North personnel stated they only provide suggestions to NASA regarding an asset's heritage status and it is the Agency's responsibility to make the final decision. We question whether having a contractor make determinations as to which items NASA should retain for their historical importance is an appropriate process.

Smithsonian Institution's Process for Retaining Historic Property

To explore how other organizations make decisions regarding the retention or disposal of historically significant property, we contacted the Smithsonian Institution for insights into its processes. According to Smithsonian personnel, each museum has curators who participate on a committee and recommend artifacts to maintain. A variety of curators, each with a particular field of expertise, work together to identify artifacts that should be retained, make recommendations on which Smithsonian museum should display an artifact, and determine how an artifact should be displayed. Ultimately, the museum director will determine whether to commit museum resources to maintain an artifact. Removing artifacts from the Smithsonian's collection generally follows the same process; however, according to Smithsonian personnel, this process is more difficult because curators tend to be reluctant to remove artifacts, even those likely never to be exhibited.

³² NPR 1387.1, *NASA Exhibits Program* (March 17, 2010).

³³ NPR 9250.1C.

Although NASA manages significantly fewer historical personal property than the Smithsonian, we support the practice of identifying a primary decision maker with the authority to commit the necessary resources to properly preserve retained artifacts. Because no one person should be expected to have the breadth of knowledge necessary to make decisions on all historic or heritage artifacts that should be maintained, the decision maker should be supported by personnel who have firsthand knowledge of an item's historical significance, along with how that item can be utilized. We encourage NASA to adopt a process that more resembles the Smithsonian's approach to more effectively assess historic property as to whether they should be retained or transferred to other organizations for preservation and utilization.

NASA Needs to Develop a Process to More Effectively Manage Agency Heritage Assets

NASA's lack of a sufficient process to identify its heritage assets can jeopardize the preservation of irreplaceable historic property. On the other hand, expending Agency funds to preserve personal property no longer needed or that has little historical significance to NASA is a poor use of resources. For example, the Shenandoah Plaza historic district at Ames (listed on the National Register) contains an anchor monument designated by NASA to be a heritage asset. While the anchor is not related to a NASA mission, it is a monument within the historic district. Therefore, we believe the anchor is appropriately listed as a heritage asset. In contrast, we question the appropriateness of NASA classifying two aircraft left by the U.S. Navy at Moffett Field as heritage assets as they have no apparent historical significance to NASA's mission.³⁴ The individual responsible for the aircraft stated they could not determine their historical significance and NASA has not invested any funds toward their preservation for at least 5 years. Both aircraft were left by the Navy because it did not want them. In this case, the heritage classification afforded these items is questionable because NASA is not the best steward of the aircraft.

P-3 Plane Left by the U.S. Navy at Ames



Source: NASA OIG.

Spacelab Module

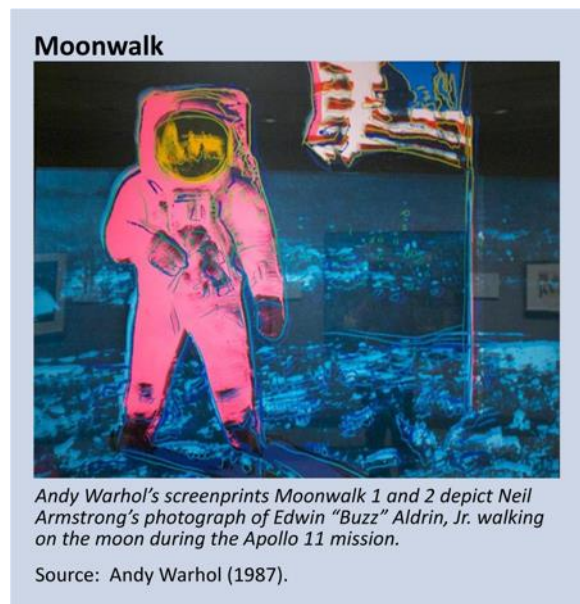


Source: NASA.

³⁴ The aircraft—a P-2 Neptune and P-3 Orion—were both used by the U.S. Navy for anti-submarine and maritime surveillance operations.

Additionally, Kennedy categorized 11 Spacelab module items as heritage assets, but those items have been on indefinite loan to the European Space Agency for display since 1998.³⁵ Kennedy personnel said they would prefer to dispose of or permanently transfer the items to the European Space Agency because NASA has no use for the property and does not wish to continue expending resources to track, manage, and report on them. According to Center personnel, the property would have to be shipped back to Kennedy to initiate the disposal process with NASA paying the shipping costs for the large items. Kennedy personnel said they are working with Headquarters staff to identify an alternative approach, a process they say has become time-consuming. Given that NASA has indicated that it does not want the items returned coupled with the length of time they have been on loan to the European Space Agency, we question whether NASA should consider these items heritage assets.

Lastly, NASA categorizes 815 pieces of artwork as heritage assets on the Agency's 2017 financial statements, including 667 pieces Kennedy maintains as part of the NASA Art Program and 21 portraits at NASA Headquarters.³⁶ An additional 128 pieces of artwork are unaccounted for, and the NASA Art Program Manager said these pieces are presumed to be located at various Centers. As a result of our inquiries, the Art Program Manager is undertaking an effort to locate the art. Moreover, we found that only 29 of the 667 of artwork pieces at Kennedy were being displayed at the Center with the remainder in storage. Through our review efforts, we determined 4 portraits hanging in NASA Headquarters were not recorded as heritage assets and 1 of the 21 pieces of artwork recorded as a heritage asset was double counted. Therefore, Headquarters should be reporting 24 rather than 21 portraits as heritage assets.



According to the NASA Art Program Manager, displaying art at NASA Centers is problematic because it requires specific environmental conditions, such as maintaining the correct temperature, humidity, and lighting to ensure proper preservation, often a costly undertaking for the Centers. In addition, NASA receives few requests from external organizations to borrow its artwork, and as a result, most of the artwork is maintained in storage. As such, it may be best for these assets to be transferred to an outside organization such as the Smithsonian's National Air and Space Museum that could more effectively display and preserve the art.³⁷

³⁵ Spacelab was a reusable laboratory carried within the Space Shuttle's cargo bay on multiple missions. The current loan to the European Space Agency has a base term of 10 years that requires NASA to review the agreement at the end of the term; however, the loan does not limit the number of times the agreement can be extended.

³⁶ The NASA Art Program was created by NASA Administrator James Webb in 1962 to commemorate past and future space-related events. The program stopped acquiring new art in 2010 due to a lack of funding. As part of Kennedy's contract with Delaware North, the artwork not displayed is maintained by the contractor at Kennedy Visitor Complex.

³⁷ In 1974, NASA transferred about 2,100 art pieces from the Agency's 1963–1974 collection to the National Air and Space Museum where it is maintained in a storage facility at the Udvar-Hazy Center in Chantilly, Virginia.

NASA NEEDS TO FURTHER STRENGTHEN PROTECTIONS OF CHALLENGER AND COLUMBIA ARTIFACTS

While Kennedy has procedures to account for and safeguard Space Shuttle Columbia historical artifacts, establishing formal, written agreements with parties in possession of these and Space Shuttle Challenger artifacts would help to ensure that these highly sensitive items are preserved. According to the current procedure, NASA documents the terms in a loan request form; however, the guidance does not require the borrower to sign the form to indicate they agreed to the loan terms. For example, in 2013, Kennedy loaned 10 objects recovered from the Columbia accident to the University of Texas at El Paso's Department of Metallurgical and Materials Engineering for research without having the school sign an official loan agreement or document its plan for securing the artifacts. Additionally, in 2015, Kennedy placed objects from the Challenger and Columbia accidents in a display case at the Kennedy Visitor Complex, a facility operated by concessionaire contractor Delaware North; however, the Center does not have a written agreement with Delaware North describing the responsibilities of the parties to preserve and safeguard the artifacts. Having signed loan agreements and requiring the development of security plans specific to the borrower location, would improve the accountability for these high-value artifacts.

NASA Has Established Additional Procedures to Protect Columbia Historical Artifacts

On January 28, 1986, Space Shuttle Challenger exploded 73 seconds into its flight, resulting in the deaths of its seven crew members. On February 1, 2003, Space Shuttle Columbia disintegrated while reentering Earth's atmosphere over Texas, killing all seven crew members minutes before the shuttle was scheduled to land at Kennedy. Debris collected from these disasters are important historical and educational artifacts. Accordingly, NASA has taken special precautions to safeguard these highly sensitive artifacts, preserving the history of these tragedies as well as the contributions of the crews who gave their lives to expand space exploration and scientific research. According to Kennedy officials, the Challenger artifacts have been permanently stored at the Center and are not available for research.

Shortly after the Columbia accident in 2003, NASA and other government and private researchers began studying the more than 84,000 pieces of debris collected as part of the accident investigation. As part of this process, NASA created the Apollo, Challenger, Columbia Lessons Learned Program at Kennedy to serve as the steward for all Columbia artifacts and share lessons of the past to assist with future mission success, including the authority to make Columbia artifacts available to aerospace and educational entities for research purposes.³⁸

As of February 2018, Kennedy has made 63 loans of the Columbia artifacts to outside organizations to conduct research. In addition, the Center has also permitted the display of Challenger and Columbia artifacts at the Kennedy Visitor Complex. Given their historical and emotional significance, Kennedy imposes additional security requirements on the handling and storage for these artifacts compared to loans of other personal property. Specifically, Kennedy staff developed procedures that only apply to Columbia artifacts to guide how the Center will store and loan the assets.³⁹ These procedures require that the items be stored only in areas that have controlled access without suspended ceilings, have access only through a single door, and include a second secured area such as a locked cabinet or interior room. Kennedy personnel stated that they have not lost any artifacts; however, in reviewing these procedures, we found they could be improved.

Space Shuttle Columbia Heading to Launch Pad



Source: NASA.

Kennedy Loaned Columbia Artifacts without Requiring the Borrower to Sign a Loan Agreement or Develop a Written Security Plan

In 2013, Kennedy loaned 10 artifacts from the Columbia accident to the University of Texas at El Paso's Department of Metallurgical and Materials Engineering for research without requiring the University to sign a formal loan agreement or document its plan for securing the artifacts.⁴⁰ Although the loan of the artifacts complied with Kennedy's Columbia-specific loan procedures, the policy did not require a written agreement signed by the borrower. According to the Columbia loan procedures, before receiving Space Shuttle artifacts, an outside entity must provide a description of the scientific goals and objectives of the research it plans to conduct. NASA then reviews the merits of the proposed research

³⁸ Only the Columbia artifacts are available for research. NASA created the Apollo, Challenger, Columbia Lessons Learned Program in May 2018 to administer the duties of the Columbia Research and Preservation Office, which was the office that was originally created in 2004 to manage the Columbia artifacts.

³⁹ Kennedy NPR 8621.1B, *Columbia Research and Preservation* (August 10, 2015).

⁴⁰ As of February 2018, the research conducted by the University of Texas at El Paso's Department of Metallurgical and Materials Engineering has resulted in two peer-reviewed journal articles, three presentations at technical conferences, and three doctoral dissertations. Research continues and is expected to result in additional scientific findings.

and the loan form that describes the terms of the agreement.⁴¹ According to Kennedy officials, University officials completed the form, but were not required to sign the document to indicate they agreed to the loan terms.

Similarly, Kennedy did not require University of Texas officials to agree in writing to the loan agreement's security protocols. According to Kennedy officials, the Center relied on the Columbia Debris Loan Request form to ensure the borrower was aware of and complied with the additional security protocols; however, as stated earlier, the borrower was not required to sign the form. As such, the University never developed a written security plan for securing the artifacts at their location. According to University personnel, they discussed general security requirements with a Kennedy official and based on that discussion agreed to the security requirements.

Although Kennedy's procedures require the Center's Office of Protective Services to review and approve security plans when the borrower plans to deviate from the standard requirements, these officials are not included in the routing process for approving such loans. Consequently, Kennedy officials may loan items to entities without the Center's Office of Protective Services review and approval. When we brought these issues to the attention of Kennedy's Office of Protective Services, personnel agreed that in the future the better practice would be to require all borrowers to develop a written security plan for review and their office should be included in the list of approving officials. The personnel said that they plan to create a template to assist borrowing organizations to create their own security plan. This plan will then serve as formal documentation of the security protocols. Kennedy Office of Protective Services personnel said they are taking steps to implement these changes in the Columbia loan procedures.

Without a signed agreement that is updated to reflect changes, the terms of a loan can be unclear and misunderstandings between the parties are more likely to occur. For example, according to the loan form, the University of Texas loan was anticipated to end in 2015; however, University personnel told us the loan was for an unidentified period of time and would end at the natural conclusion of its research. According to a Kennedy official, the Center extended the duration of the loan based on verbal conversations with University personnel. When we brought this issue to the attention of personnel in Kennedy's Office of the Chief Counsel, they agreed that clearly documenting the terms of the loan would be a better practice. They stated that for a Columbia loan approved in 2015 to ASM International, a professional organization that supports materials research, the terms of the loan were documented in NASA's standard equipment loan form rather than relying on the procedures used for the University of Texas loan.⁴² Although we agree that this is a positive step, after reviewing the loan agreement for ASM International we noted that the agreement did not include the additional security requirements for Columbia artifacts. Kennedy officials agree that the requirement for additional security terms should be included with the standard equipment loan form for all Columbia artifacts loans and plan to implement this change in the procedures.

Lastly, despite Columbia artifacts being on loan for almost 5 years, NASA has not required the University of Texas to conduct an annual inventory of the assets. Requiring an annual inventory was an improvement NASA made in 2013 to the NASA-wide equipment loan process but not included in the Columbia loan process.⁴³ An annual inventory would notify NASA if any of the sensitive artifacts were lost or damaged. Without such a periodic inventory requirement, losses may be unknown for years and

⁴¹ Kennedy Documented Procedure Form 3402, *Columbia Debris Loan Request*.

⁴² NASA Form 893, *Loan of NASA Equipment*.

⁴³ NPD 4200.1C.

only identified at the end of the loan period, reducing the likelihood of retrieving any sensitive artifacts. According to Kennedy officials, while they have not required the University of Texas to conduct an annual inventory of the assets, the Center has maintained periodic communications with the University and discussed the status of the Columbia artifacts. Nonetheless, Kennedy officials stated a documented annual inventory with an accounting back to NASA would be a better practice and plan to incorporate this change into its loan procedures.

Kennedy Lacks a Formal Agreement with the Contractor Managing the Center’s Visitor Complex to Safeguard Artifacts

Starting in 2015, artifacts from the Challenger and Columbia accidents have been featured in an enclosed display about the crew members at the Kennedy Visitor Complex, which is managed by Delaware North. However, the Center has no written agreement with Delaware North detailing the responsibilities of both parties to safeguard and preserve these artifacts. Normally, the Center transfers property through a contractual arrangement that provides Delaware North with Agency-owned property for display at the Kennedy Visitor Complex. However, according to Kennedy personnel, the Challenger and Columbia artifacts are not officially loaned or transferred to Delaware North because the Center wanted to maintain greater control than normally required under the general property transfer procedures. Kennedy personnel explained that because Delaware North is not using the assets for research, the artifacts remain under the Center’s control but are merely stored in the Kennedy Visitor Complex. Currently, Delaware North will contact Kennedy personnel to open the case should access be required. However, this agreement is solely verbal, a situation that could easily lead to misunderstandings between the Center and the contractor, particularly given personnel turnover and the fact that Delaware North maintains a set of keys to the display case for emergency purposes. To illustrate our concern, the Kennedy Visitor Complex contract with Delaware North recently changed contracting officers in January 2018, with the new Kennedy official unaware of the verbal agreement with Delaware North. The new contracting officer and other Kennedy officials agreed that this kind of arrangement could present a risk and should be documented. Having signed loan agreements and requiring the development of security plans specific to the borrower’s location would add additional protection and accountability to these high-value artifacts.

NASA SUFFICIENTLY MANAGED HISTORIC REAL PROPERTY AT AMES AND KENNEDY, BUT LEASE REVENUES AT AMES COULD BE BETTER UTILIZED

NASA has strong internal controls for managing its historic real property, but the Agency could more effectively manage funds generated from its two current NHPA lease agreements at Ames. Under NHPA, proceeds from the leases must be used to maintain, repurpose, or refurbish other NASA historic facilities. NASA policy limits where funds generated from NHPA leases may be used, requiring officials to first consider the Center that generated the lease income. While this policy makes sense when the Center can use those funds on mission-critical historic properties, the policy can also result in NASA renovating facilities that do not have an Agency mission use. In our view, proceeds generated from NHPA leases should be prioritized for use on historic properties critical to NASA's mission or support functions regardless of whether or not they reside on the Center that generated the lease income.

Historic Real Property is Well-Managed

During site visits to Ames and Kennedy, we found both Centers were complying with NHPA and have successfully repurposed and reused historic properties. For example, Ames has repurposed many of the historic facilities located at Moffett Field and Shenandoah Plaza, leasing them to more than 70 industry, government, and university partners that often to collaborate with NASA on technology projects (see Figure 3).⁴⁴

⁴⁴ When leasing facilities to outside entities, NASA most commonly uses authorities granted in National and Commercial Space Programs, Pub. L. No. 111-314 (2010), as amended. In a prior report, NASA OIG examined the Agency's leasing practices. See NASA OIG, *NASA's Infrastructure and Facilities: An Assessment of the Agency's Real Property Leasing Practices* (IG-12-020, August 9, 2012).

Figure 3: Refurbished Facilities at Ames listed on the National Register of Historic Places

Building 17 Admiral Building



Building 17 houses the NASA Lunar Science Institute.

Building 19 Bachelors Enlisted Quarters



Building 19 has been refurbished into the NASA Exchange Lodge and a multi-tenant office building.

Building N243 Flight and Guidance Simulation Laboratory



Except for the Vertical Motion Simulator, which is still active, building N243 has been refurbished into primarily office and lab space.

Source: NASA.

Similarly, Kennedy is reusing many of its historic facilities for NASA programs such as the Space Launch System. In addition, the Center is leasing other historic facilities—including Launch Pad 39A—to commercial firms (see Figure 4).

Figure 4: Refurbished Facilities at Kennedy listed or Eligible to be Listed on the National Register of Historic Places

Vehicle Assembly Building



Work platforms inside the VAB provide access to the Space Launch System core stage and solid rocket boosters during processing and stacking operations.

Boeing’s Commercial Crew and Cargo Processing Facility



One of the Orbiter Processing Facilities was refurbished to support the manufacturing of Boeing’s CST-100 Starliner spacecraft for flight tests and crew rotation missions to the International Space Station.

Launch Pad 39A



SpaceX Falcon Heavy rocket begins its demonstration flight with liftoff from Launch Pad 39A, which NASA leased to SpaceX for use and operation.

Source: NASA.

Leasing historic real property for which NASA otherwise has no current use supports NASA operations by contributing to the funds available to maintain a Center's infrastructure. Officials at both Ames and Kennedy stated they continue to identify buildings and structures for possible inclusion on the National Register and coordinate with their respective state historic preservation offices to ensure these facilities are preserved. Additionally, when NASA determines that demolition is the best approach for a building or structure, both Ames and Kennedy routinely document the facility's history and significance to NASA.⁴⁵ NASA policy thoroughly defines and sets forth the requirements surrounding the planning of construction and demolition actions for real property, and requires the involvement of the Agency's Cultural Resources Management officials.⁴⁶ Further, Centers are required to have budget and facility master plans for all real property projects, which are reviewed by the Headquarters Facilities and Real Estate Division that then prioritizes construction projects and funding NASA-wide.⁴⁷ Finally, NASA Headquarters has an oversight process to ensure historical preservation of all NASA facilities being modified, rehabilitated, and demolished.

Use of NHPA Lease Proceeds Does Not Always Align with NASA Goals

Under NHPA, federal agencies can lease historic real property eligible for or listed on the National Register if the agency determines the lease will ensure preservation of the property. According to NASA officials, the only two facilities leased under NHPA authorities—both at Ames—are unique to the Agency. The NHPA leasing authority was used because it allows for greater flexibility in the terms of the lease agreement. For example, under NHPA guidelines, a federal agency can lease a historical facility for which it no longer has a mission use and can negotiate reimbursement terms to help preserve the property. However, both of these options are not normally permitted under the National Aeronautics and Space Act, NASA's typical leasing authority. Further, proceeds generated under an NHPA lease can be retained by the Agency and used to defray administration, maintenance, repair, and other related expenses for any real property listed on the National Register. NASA policy allows the generating Center to use NHPA lease proceeds to first reimburse the Center's costs related to the administration of the specific lease.⁴⁸ The remaining proceeds can then be used to preserve the leased property or other properties at the Center listed on the National Register. The projects using these funds have to be approved by the Headquarters Facilities and Real Estate Division.⁴⁹ According to Ames' Five-Year NHPA Funding Plan, the Center plans on using lease proceeds on historic properties that support NASA's programs, such as the Unitary Planned Wind Tunnel, Arc Jet Complex, and Vertical Motion Simulator.⁵⁰ However, Ames also plans to use a significant amount of funds on Building 25—previously used by the

⁴⁵ NPR 8800.15C, *Real Estate Management Program* (February 24, 2015).

⁴⁶ NPR 8820.2G, *Facility Project Requirements* (June 5, 2014).

⁴⁷ The Facilities and Real Estate Division manages NASA's Construction of Facilities program and provides direction for real property management. NPR 8810.1A, *Center Master Planning* (February 13, 2013).

⁴⁸ NASA Interim Directive (NID) 8800-114, *NASA Interim Directive for National Historic Preservation Act Leases* (October 1, 2017).

⁴⁹ NID 8800-114, allows other centers to submit potential projects that can be started in a short time frame in case the generating center cannot use the funds in a timely matter and allows the Facilities and Real Estate Division to reprioritize revenue for urgent repair.

⁵⁰ The Unitary Planned Wind Tunnel complex covers 11 acres and is comprised of three test sections designed to test a single model at different speeds. The Arc Jet complex, comprised of three units, is used to conduct research on thermal protection systems. The Vertical Motion Simulator is the world's largest and most sophisticated motion-based simulator.

Navy as an auditorium—which does not support a NASA program. Consequently, we question whether using NHPA lease proceeds on Building 25 is the most effective use of these funds because it conflicts with the Agency’s goal of reducing the number of unneeded facilities and could be used on higher-priority facilities.⁵¹

Moffett Field Lease

NASA’s lease with Planetary Ventures encompasses approximately 1,000 acres at Moffett Field (see Figure 5) for up to 96 years for purposes including research and development related to space, aviation, and robotics.⁵² Under the lease agreement, Planetary Ventures is required to “diligently pursue” remediation of any health and environmental concerns on the property, including the re-siding of Hangar One, scheduled to be completed by 2025. The initial rent fee was \$10.25 million annually, increasing over time to \$20.5 million in the 12th through 60th years, and ultimately reaching \$22 million in each of the final 12 years of the agreement.

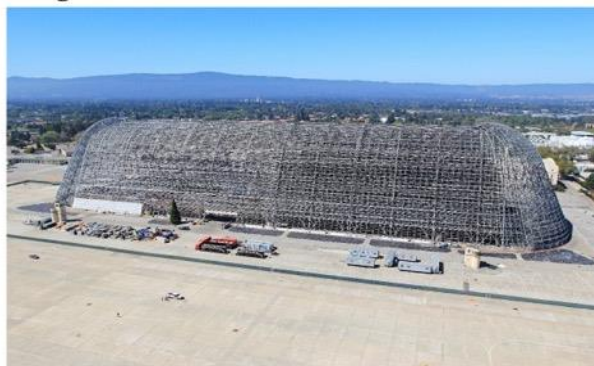
Figure 5: Moffett Field at Ames

Moffett Field



Aerial view of Moffett Field. On the left is Hangar 1 prior to removal of hazardous covering.

Hangar One



Hangar One after hazardous cover was removed.

Source: NASA.

⁵¹ NPR 8820.2G.

⁵² According to the agreement, the lease includes Hangars One, Two, and Three; Building 158; the Moffett Field; and the golf course.

In addition to helping Ames preserve Moffett Field, the lease has generated millions of dollars in revenue that Ames has used to fund other preservation projects at the Center (see Table 2).

Table 2: Moffett Field Historic Preservation Act Lease

	Fiscal Year (dollars in millions)			
	2015	2016	2017	2018 (projected)
Moffett Field base rent	\$5.13 ^a	\$10.25	\$10.25	\$12.88
Institutional support and other administrative costs	(\$2.97)	(\$5.39)	(\$5.86)	(\$6.00)
Proceeds after expenses available for use on other projects	\$2.16	\$4.86	\$4.39	\$6.88

Source: NASA OIG presentation of Ames OCFO data.

Note: These figures do not include reimbursable services such as utilities.

^a The amounts were prorated for fiscal years 2015 and 2018.

Carnegie Mellon University Lease

In addition to the Moffett Field agreement, in 2003, NASA leased Building 23 at Ames Research Park, formerly a Navy dispensary, for up to 48 years to Carnegie Mellon University for educational purposes. The historical aspect of this building is represented in the Spanish Colonial Revival design that dates back to the early 1930s. NASA bases the rent on periodic appraisals conducted to determine the property's fair market value and additional periodic adjustments for inflation. The lease agreement allows Carnegie Mellon to earn rent credits based on the cost of capital improvements the University makes to the facility.⁵³ As of 2017, Carnegie Mellon had earned approximately \$5.6 million in credits from these improvements. While the base rent is currently \$354,048 per year, Ames personnel said they expect this to increase as a result of ongoing appraisal and as Carnegie Mellon exhausts its rent credits. In addition to the base rent, Carnegie Mellon pays a portion of annual institutional support costs for activities such as security and infrastructure maintenance, which in fiscal year 2018 amounted to \$101,986, and also reimburses the Center for services provided such as utilities and maintenance.

Building 23 Dispensary



Carnegie Mellon University refurbished Building 23 to establish a campus in Silicon Valley to educate engineers and scientists.

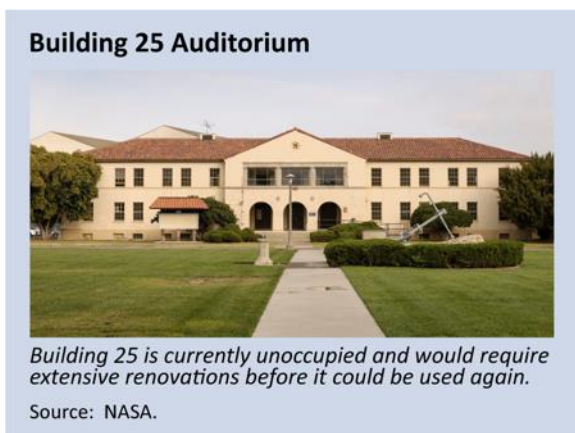
Source: NASA.

⁵³ According to the lease, capital improvements are permanent improvements to building systems that restore or add useful life and value to the structure.

NASA Needs to Better Align Agency Goals with Use of Historic Preservation Lease Proceeds

NASA's policy for the use of NHPA lease proceeds does not align with Agency goals established to minimize unneeded facilities, including prioritizing facility projects in order to minimize or eliminate facilities not critical to the Agency's mission. For example, NASA generally does not support funding new construction or renovations to a facility when space is already available to achieve the specific mission. However, under NASA's NHPA leasing policy, a Center could use proceeds from NHPA leases to renovate unneeded facilities even if the funds could be used on a historic, mission-critical building at another Center. Although the Headquarters Facilities and Real Estate Division can reprioritize revenue for urgent repairs at other Centers, the policy generally requires the funds first be offered to the revenue-generating Center. As a result, Centers could use funds generated from leases such as Ames' Moffett Field to fund projects that do not further NASA's mission.

For example, Ames plans to use the Moffett Field lease proceeds to fund a planned \$10 million project to repair Building 25 located in the Shenandoah Plaza Historic District even though there may be higher priority facilities more important to NASA's mission at other Centers. Since Building 25 is located within Shenandoah Plaza, the facility is protected by NHPA, meaning that if NASA chooses to keep the facility, the Agency is required to preserve it.⁵⁴ However, NASA is not required to restore Building 25 if the Agency has no use for the property. While Ames continues to evaluate uses for Building 25, the building has not been occupied since 1998 and is currently uninhabitable. According to Center officials, the goal of the project is to repair the building to make it suitable for occupancy and then lease it to an outside entity with the intent of spurring collaboration with NASA and other leasing tenants at the Center.⁵⁵ However, the Center has not identified any prospective tenants with mission-specific collaboration efforts that would offset the cost of the renovations.



Although NASA is authorized under NHPA to use these funds to refurbish Building 25, we question whether NASA should use lease revenue from its other historic properties to renovate a building that has no current or future mission use. Moreover, using these limited funds to renovate Building 25 may lead to deferral of other higher-priority Agency renovation projects on more than 240 facilities throughout NASA listed on the National Register, most of which have a current mission-related use.

⁵⁴ When discussing preservation in relation to NHPA, the Secretary of the Interior has defined "preservation" as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

⁵⁵ The planned scope of work is separated into two phases. The first phase is to make the building habitable and includes asbestos removal; lead abatement; structural upgrades; door, exterior stucco, floor, restroom, roof, and window refurbishment; upgrades to the electrical systems and accessibility to make the facility compliant with the Americans with Disabilities Act; fire/security system installation; and interior wall and lighting fixture installation to support office space. The second phase two includes cooling system and elevator installation, heating system refurbishment, and painting interior walls. Ames is still evaluating potential funding sources for phase two; however, currently the project is included Ames' Five-Year NHPA Funding Plan.

CONCLUSION

NASA uses its historic buildings, structures, and personal property to execute its mission and educate the public about Agency accomplishments. However, for much of the past decade the OIG has identified NASA's aging infrastructure and facilities as a top management challenge. In this review, we found the Agency has fallen short in the past maintaining its historic personal property, resulting in the loss of historically valuable property. Moving forward, NASA risks losing additional historically significant property if it fails to improve its control and accountability over these assets. Such losses will diminish NASA's ability to fulfill its education and outreach missions and will deny future generations a tangible window into historic NASA missions. Further, NASA's controls over historic real property were sufficient at the two Centers visited, but the Agency could be missing out on opportunities to use proceeds from the lease of historic facilities at Ames to restore additional mission-critical, historic infrastructure.

RECOMMENDATIONS, MANAGEMENT'S RESPONSE, AND OUR EVALUATION

To improve the management of NASA's efforts to retrieve lost historic personal property, we recommended the NASA General Counsel

1. develop a process to more effectively identify, validate ownership of, and coordinate within NASA and/or other federal agencies on the recovery of historic property.

To improve NASA's identification and management of heritage assets, we recommended that the Assistant Administrator of the Office for Strategic Infrastructure, in coordination with the Office of Communication

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 and
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.

To improve the management of Columbia and Challenger artifacts, we recommended the Kennedy Space Center Director

4. ensure agreements are signed, appropriately updated, and include all necessary loan terms, including a security plan developed by the borrower and reviewed by the Center's Office of Protective Services prior to property transfer.

To improve the use of funds generated from NHPA leases, we recommended the Assistant Administrator of the Office for Strategic Infrastructure

5. ensure NASA policies and procedures for using the proceeds from facilities leased under NHPA authority appropriately aligns with Agency goals to minimize excess facilities.

We provided a draft of this report to NASA management who concurred with three of our five recommendations. We consider management's comments to Recommendations 1, 3, and 4 responsive; therefore, those recommendations are resolved and will be closed upon verification and completion of the proposed corrective actions.

Management partially concurred with Recommendation 2, stating that Office of Communications will work closely with the Office of the Chief Financial Officer and Office of Strategic Infrastructure to ensure a realistic and manageable approach to addressing heritage assets. However, we found this comment vague and unresponsive. As such, this recommendation will remain unresolved as we work with the Agency to understand what specific action it plans to take to address our recommendation.

Management did not concur with Recommendation 5, stating that NASA’s policy is consistent with the NHPA. We agree that NASA is authorized under NHPA to use proceeds from these leases to refurbish any historic property listed on the National Register of Historic Places, which includes Building 25 at Ames. However, given the Agency’s budgetary constraints and deferral of other higher-priority renovation projects, we question whether NASA should continue to use these funds to renovate buildings that have no current or future mission use. We believe Agency policy should be revised to reflect the need to prioritize funds to mission-related uses. As such, this recommendation will remain unresolved pending further discussion with the Agency.

Management’s comments are reproduced in Appendix B. Technical comments provided by management have also been incorporated, as appropriate.

Major contributors to this report include Laura Nicolosi, Mission Support Director; Karen VanSant, Project Manager; Lynette Westfall; and Troy Zigler. Sarah McGrath provided editorial and graphic assistance.

If you have questions about this report or wish to comment on the quality or usefulness of this report, contact Laurence Hawkins, Audit Operations and Quality Assurance Director, at 202-358-1543 or laurence.b.hawkins@nasa.gov.



Paul K. Martin
Inspector General

APPENDIX A: SCOPE AND METHODOLOGY

We performed this audit from June 2017 through August 2018 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To evaluate the management of NASA's historic real and personal property, we performed work at Ames, Kennedy, and NASA Headquarters. We reviewed documentation related to the identification and accounting for historic property, and the processes used to manage these assets. We reviewed applicable agreements between NASA and the GSA, the Smithsonian Institution, and the Advisory Council on Historic Preservation; the Delaware North contract; and lease agreements to meet our audit objectives. We interviewed, among others, the Cultural Resources Management Manager; Ames and Kennedy officials and their related contractors; and NASA officials in the Environmental Management Division, Logistics Management Division, Facilities Management Division, Office of the Chief Financial Officer, and Office of Communications.

We reviewed federal laws and regulations and NASA policies and procedures:

- National Aeronautics and Space Act of 1958, Pub. L. No. 85-568 (1958).
- National Historic Preservation Act, Pub. L. No. 89-665 (1966), as amended through December 16, 2016
- National and Commercial Space Programs, Pub. L. No. 111-314 (2010)
- An Act to Confirm Full Ownership Rights for Certain United States Astronauts to Artifacts from the Astronauts' Space Missions, Pub. L. No. 112-185 (2012)
- 36 C.F.R. Part 800, *Protection of Historic Properties* (1981)
- 36 C.F.R. Part 60, *National Register of Historic Places* (2012)
- 36 C.F.R. Part 63, *Determination of Eligibility for Inclusion in the National Register of Historic Places* (1981)
- 41 C.F.R. Chapter 101, *Federal Property Management Regulations* (2011)
- Exec. Order No. 11593, 36 Fed. Reg. 8921, *Protection and Enhancement of the Cultural Environment* (May 13, 1971)
- Exec. Order No. 13175, 65 Fed. Reg. 67249, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000)
- Exec. Order No. 13287, 68 Fed. Reg. 10635, *Preserve America* (March 3, 2003)
- Exec. Order No. 13327, 69 Fed. Reg. 5897, *Federal Real Property Asset Management* (February 6, 2004)
- GSA, *Personal Property Disposal Guide* (February 2011)
- FASAB Statement of Federal Financial Accounting Standards 29, *Heritage Assets and Stewardship Land* (July 7, 2005)

- FASAB, Technical Release No. 9, *Implementation Guide for Statement of Federal Financial Accounting Standards 29: Heritage Assets and Stewardship Land* (February 20, 2008)

We also reviewed NASA policies and requirements:

- NPD 4200.1C, *Equipment Management* (July 31, 2013)
- NPD 8800.14E, *Policy for Real Estate Management* (June 3, 2015)
- NPR 1387.1 and 1387.1A, *NASA Exhibits Program* (March 7, 2010, and April 11, 2018, respectively)
- NPR 1441.1, *NASA Record Retention Schedules* (May 7, 2014)
- NPR 1441.1E, *NASA Records Management Program Requirements* (January 29, 2015)
- NPR 4200.1H, *NASA Equipment Management Procedural Requirements* (March 8, 2017)
- NPR 4300.1C, *NASA Personal Property Disposal Procedural Requirements* (June 27, 2013)
- NPR 4310.1A, *Artifact Identification and Disposition* (May 12, 2014)
- NPR 4500.1, *Administration of Property in the Custody of Contractors* (February 24, 2014)
- NPR 8510.1 and 8510.1A, *NASA Cultural Resources Management* (June 20, 2012, and June 20, 2017, respectively)
- NPR 8800.15C, *Real Estate Management Program* (February 24, 2015)
- NPR 8810.1A, *Center Master Planning* (February 13, 2013)
- NPR 8820.2G, *Facility Project Requirements* (June 5, 2014)
- NPR 9250.1C, *Property, Plant, and Equipment and Operating Materials and Supplies* (October 29, 2015)
- NID 8800-114, *National Historic Preservation Act Leases* (October 1, 2017)
- Kennedy NPR 8621.1B and 8621.1A, *Columbia Research and Preservation* (August 10, 2015, and March 11, 2009, respectively)
- NASA Guidance, *Understanding NASA's Historic Districts* (June 2008)

Use of Computer-Processed Data

We used computer-processed data from NASA's real property management system; property, plant and equipment system; and financial management system to identify NASA's real and personal property. We did not independently verify the reliability of this information because we have previously reported that these systems are not complete. The computer-processed data obtained does not impact our findings regarding NASA processes.

Review of Internal Controls

We reviewed and evaluated the internal controls over NASA's management of historical real property and heritage assets. The control weaknesses we identified are discussed previously in this report. Our recommendations, if implemented, should correct the identified weaknesses.

Prior Coverage

During the past several years, the NASA OIG and the Government Accountability Office (GAO) have issued 11 reports of particular relevance to the subject of this report. It should be noted that although GAO has not conducted any prior audit work in the field of NASA “historic property,” it has conducted audits of NASA facilities—some of which were historic. Unrestricted reports can be accessed at <http://oig.nasa.gov/audits/reports/FY19> and <http://www.gao.gov>, respectively.

NASA Office of Inspector General

Audit of NASA’s Environmental Restoration Efforts (IG-14-021, July 2, 2014)

NASA’s Environmental Remediation Efforts at the Santa Susana Field Laboratory (IG-13-007, February 14, 2013)

NASA’s Efforts to Reduce Unneeded Infrastructure and Facilities (IG-13-008, February 12, 2013)

NASA’s Infrastructure and Facilities: An Assessment of the Agency’s Real Property Leasing Practices (IG-12-020, August 9, 2012)

NASA’s Infrastructure and Facilities: An Assessment of the Agency’s Real Property Master Planning (IG-12-008, December 19, 2011)

NASA’S Management of Moon Rocks and Other Astromaterials Loaned for Research, Education, and Public Display (IG-12-007, December 8, 2011)

NASA Infrastructure and Facilities: Assessment of Data Used to Manage Real Property Assets (IG-11-024, August 4, 2011)

NASA’s Hangar One Re-Siding Project (IG-11-020, June 22, 2011)

Preparing for the Space Shuttle Program’s Retirement: Review of NASA’s Controls Over Public Sales of Space Shuttle Property (IG-11-016, March 15, 2011)

Government Accountability Office

High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others (GAO-17-317, February 15, 2017)

Defense Infrastructure: Military Services Lack Reliable Data on Historic Properties (GAO-01-437, April 6, 2001)

APPENDIX B: MANAGEMENT'S COMMENTS

National Aeronautics and Space Administration
 Headquarters
 Washington, DC 20546-0001



OCT 18 2018

Reply to Attn of:

Office of Strategic Infrastructure

TO: Assistant Inspector General for Audits
 FROM: Associate Administrator for the Strategic Infrastructure
 SUBJECT: Agency Response to OIG Draft Report, "Audit of NASA's Historic Property Management" (A-17-016-00)

The National Aeronautics and Space Administration (NASA) appreciates the opportunity to review and comment on the Office of Inspector General (OIG) draft report entitled, "Audit of NASA's Historic Property Management" (A-17-016-00), dated July 31, 2018.

In the report, the OIG makes five recommendation to NASA intended to improve the overall management of NASA's historic property.

Specifically, the OIG recommends the following:

To improve the management of NASA's efforts to retrieve lost historic property, the OIG recommends that NASA's General Counsel:

Recommendation 1: Develop a process to more effectively identify, validate ownership of, and coordinate within NASA and/or with other agencies on recovery of historic property.

Management's Response: Concur. The Office of General Counsel, the Office of Strategic Infrastructure's (OSI) Logistics Management Division (LMD), and the Office of Communications (OCOM) are working together to draft and publish NASA Procedural Requirements (NPR) that will address the process and procedure for identifying and recovering historic property.

Estimated Completion Date: May 31, 2020.

To improve NASA's identification and management of heritage assets, the OIG recommends that the Assistant Administrator for Strategic Infrastructure, in coordination with the Associate Administrator for Communications:

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.

Management's Response: Partially Concur. Heritage assets are defined by OMB with the Office of the Chief Financial Officer (OCFO) having responsibility for reporting those assets in NASA's annual financial statements. OCOM has the lead for the identification and management of heritage assets, which includes accountability as outlined in NPR 4200, "NASA Equipment Management Procedural Requirements" and NID 8800.114, "NASA Interim Directive for National Historic Preservation Act Leases," with implementation procedures in NPR 1387, "NASA Exhibits Program." Assets Managers in the LMD and Facilities and Real Estate Division (FRED) are responsible for ensuring assets are recorded within NASA's accountability systems. The OCFO retains documentation for the preparation of the required annual supplementary reporting to Congress. OSI has responsibility to ensure both personal and real property assets, whether deemed "heritage" or not, are recorded in NASA's accountability systems.

OCOM will work closely with the OCFO and OSI to ensure a realistic and manageable approach to addressing heritage assets.

Estimated Completion Date: September 30, 2019.

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.

Management's Response: Concur. Personal property custodians, exhibit managers, and historians possess the expertise for evaluating and/or justifying heritage assets as outlined in NPR 1387. OCOM will ensure all heritage assets are evaluated according to documented procedures and provide the OIG a list of what items the Agency will retain based on historical value.

Estimated Completion Date: October 31, 2019.

To improve the management of Columbia and Challenger artifacts, the OIG recommends the Kennedy Space Center (KSC) Director:

Recommendation 4: Ensure agreements are signed, appropriately updated, and include all necessary loan terms, including a security plan developed by the borrower and reviewed by the Center's Office of Protective Services prior to property transfer.

Management's Response: Concur. KSC's Spaceport and Integration Services Directorate has the primary responsibility to ensure appropriate inventory management of the Columbia and Challenger debris to include appropriate loans actions. The Delaware North Concession Agreement will be updated to account for the Columbia and Challenger debris held at the KSC Visitor Complex for exhibit purposes and its management by the Columbia Research and Preservation Office.

Kennedy's NPR 8621.1B, "Columbia Research and Preservation," which governs the management of Columbia and Challenger debris, will be updated in accordance with NPR 4200.1H, "NASA Equipment Management Procedural Requirements" and NPR 4300.1C, "NASA Personal Property Disposal Procedural Requirements."

Estimated Completion Date: October 1, 2019.

To improve the use of funds generated from National Historic Preservation Act (NHPA) leases, the OIG recommends the Assistant Administrator of the Office for Strategic Infrastructure:

Recommendation 5: Ensure NASA policy and procedures for using the proceeds from facilities leased under NHPA authority appropriately aligns with Agency goals to minimize excess facilities.

Management's Response: Non-concur with this recommendation. NASA's policy with regards to use of lease proceeds was developed to be consistent with the NHPA. The NHPA, 54 U.S.C. § 306121 (a), states "*Notwithstanding any other provision of law, each Federal agency, after consultation with the Council—*

- (1) shall, to the extent practicable, establish and implement alternatives (including adaptive use) for historic property that is not needed for current or projected agency purposes; and
- (2) may lease historic property owned by the agency to any person or organization, or exchange any property owned by the agency with comparable historic property, if the agency head determines that the lease or exchange will adequately ensure the preservation of the historic property."

The NHPA, Section 111(b) (now 54 U.S.C. §306121(b)), addresses the use of lease proceeds for historic properties as follows:

Notwithstanding any other provision of law, the proceeds of a lease under subsection (a) may be retained by the agency entering into the lease and used to defray the costs of administration, maintenance, repair, and related expenses incurred by the agency with respect to that property or other property that is on the National Register that is owned by, or are under the jurisdiction or control of, the agency. Any surplus proceeds from such leases shall be deposited in the Treasury at

the end of the 2d fiscal year following the fiscal year in which the proceeds were received.

NASA's policy establishes criteria for entering into NHPA leases and limits the use of proceeds consistent with NHPA. NID 8800.114 establishes controls for the use of proceeds. These controls include:

- Submission by the Center and approval by the Facilities and Real Estate Division (FRED) of an NHPA Lease Proceeds Usage Plan (LPUP) to the FRED that identifies how the Center plans to use the NHPA proceeds.
- FRED authority to reprioritize proceeds for urgent repair projects of NRHP-listed properties in order to meet mission or Agency needs.
- Submission by Centers and approval by FRED, projects funded by NHPA proceeds to ensure projects meet the intent of the policy and law.
- Projects may not proceed without concurrence from FRED.

Further, NPD 7330.1, "Approval Authorities for Facility Projects," establishes the FRED Director as the approval authority for projects funded from sources other than NASA appropriations, to include NHPA.

Procedures established to comply with NASA policies establish OSI/FRED for approval of maintenance and repair projects funded with NHPA proceeds, to include adaptive use of historic property that may not be needed for current or projected Agency purposes. NASA's existing policies align with NHPA and Agency goals to leverage these underutilized historic assets while reducing the financial burden of sustaining the historic assets.

We have reviewed the draft report for information that should not be publicly released. As a result of this review, we have not identified any information that should not be publicly released.

Once again, thank you for the opportunity to review and comment on the subject draft report. If you have any questions or require additional information regarding this response, please contact Fatima Johnson on (202) 358-1631.


Calvin F. Williams

cc:
General Counsel/Ms. Thompson-King
Associate Administrator for Mission Support/Mr. Tenney
Associate Administrator for Communications/Mr. Jacobs (Acting)
Kennedy Space Center Director/Mr. Cabana

APPENDIX C: REPORT DISTRIBUTION

National Aeronautics and Space Administration

Administrator
 Deputy Administrator
 Associate Administrator
 Deputy Associate Administrator
 Chief Financial Officer
 Deputy Chief Financial Officer for Finance
 General Counsel
 Associate Administrator for Communications
 Associate Administrator for Mission Support Directorate
 Assistant Administrator for Strategic Infrastructure
 Director, Ames Research Center
 Director, Kennedy Space Center

Non-NASA Organizations and Individuals

Office of Management and Budget
 Deputy Associate Director, Energy and Space Programs Division
 Government Accountability Office
 Managing Director, Financial Management and Assurance
 Director, Contracting and National Security Acquisitions

Congressional Committees and Subcommittees, Chairman and Ranking Member

Senate Committee on Appropriations
 Subcommittee on Commerce, Justice, Science, and Related Agencies
 Senate Committee on Commerce, Science, and Transportation
 Subcommittee on Space, Science, and Competitiveness
 Senate Committee on Homeland Security and Governmental Affairs
 House Committee on Appropriations
 Subcommittee on Commerce, Justice, Science, and Related Agencies
 House Committee on Oversight and Government Reform
 Subcommittee on Government Operations
 House Committee on Science, Space, and Technology
 Subcommittee on Oversight
 Subcommittee on Space

(Assignment No. A-17-016-00)