Smithsonian Institution
Office of the Inspector General

In Brief

Collections Stewardship of the National Collections at the National Museum of American History – Preservation and Physical Security

Report Number A-10-03-2, September 30, 2011

Why We Did This Audit

This report continues our series of collection stewardship audits at the Smithsonian, and is the second of two reports on the collections at the National Museum of American History (NMAH). Our overall audit objectives were to determine whether (1) physical security is adequate to safeguard the collections, (2) inventory controls are in place and working adequately to ensure that the collections are properly accounted for, and (3) collections are properly preserved at NMAH. This report covers the first and third objectives. A previous report covered the second objective (A-10-03-1).

What We Recommended

We recommended that the Smithsonian develop a prioritized plan for addressing collections storage needs; establish and implement a Preservation Program; explore opportunities to maximize storage space, replace substandard storage equipment and acquire appropriate housing materials for the collections; and develop and implement a plan to remove and decontaminate objects from storage facilities containing hazardous materials. We also recommended that the Smithsonian implement security policies and procedures to improve security controls, and develop and implement a prioritized plan to bring NMAH collections storage areas into compliance with OPS' ***Security Design Criteria***.

Management generally concurred with our findings and recommendations and has planned corrective actions that resolve all of our recommendations.

What We Found

NMAH dedicates its collections and scholarship to inspiring a broader understanding of our nation and its many peoples. The museum holds in trust approximately 3.2 million objects that encompass all aspects of the history of the United States.

Many of NMAH's collections were stored in substandard conditions. The majority of storage areas we tested were not conducive to the long-term preservation of the collections. NMAH storage equipment as well as object housing and housing practices need improvement. For example, nearly all storage rooms at the museum had exposed pipes and conduits, resulting in frequent leaks that threaten collection items. Some storage buildings are contaminated with asbestos or lead-containing dust. Overcrowding in storage rooms and cabinets has damaged objects.

Although NMAH has successfully used internal Smithsonian funding to improve conditions for certain discrete collections, it does not have a comprehensive preservation program to mitigate the deterioration of objects so that they are available for exhibitions, education, and research purposes.

NMAH's physical security is generally adequate to safeguard the collections. However, collections storage areas do not yet comply with the Office of Protection Services' (OPS) security standards. OPS had not installed required security devices in all of these areas. Furthermore, both OPS and NMAH need to improve controls over access to collections storage areas. For example, OPS security officers issued keys to staff and volunteers who lacked proper authorization to access certain collections storage areas. NMAH staff routinely stored keys in unsecured boxes or drawers and did not maintain permanent sign-out logs. These conditions increase the risk of theft and diminish control over collections.

In 2010 the Institution created a pan-Institutional Collections Space Steering Committee (CSSC) focused on ensuring that collections are preserved and remain accessible for current and future generations. We continue to hope that the Institution's Strategic Plan objective to strengthen collections stewardship results in increased attention to and support for collections management.

For additional information or a copy of the full report, contact the Office of the Inspector General at (202) 633-7050 or visit http://www.si.edu/oig

Smithsonian Institution

Office of the Inspector General

Date September 30, 2011

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From A. Sprightley Ryan, Inspector General

Subject Audit of Collections Stewardship of the National Collections at the National Museum of American History – Preservation and Physical Security, Number A-10-03-2

The Office of the Inspector General (OIG) initiated this audit to examine collections stewardship at the National Museum of American History (NMAH), which is essential for safeguarding the collections for public and scholarly use and reducing the risk of loss or theft. This report presents the results of our audit of the preservation and physical security of the collections. It is the second of two reports covering stewardship of the national collections at NMAH. We issued the first report covering inventory controls on February 8, 2011. Earlier audits covered the National Museum of Natural History (A-05-06, September 29, 2006); the National Air and Space Museum (A-09-04, March 17, 2010); and the Cooper-Hewitt, National Design Museum (A-11-02, September 12, 2011).

Collections are at the core of the Smithsonian. The Smithsonian Strategic Plan for fiscal years 2010-2015 states:

> The collections are fundamental to our work and to that of countless scholars and many federal agencies; it is our responsibility to preserve them for future generations. To ensure they remain available, we will improve collections storage and management, substantially expand access to collections through digital technologies, and build public/private partnerships that strategically enhance collections care.

The collections drive the mission and the work of the Smithsonian. Failure to adequately secure and care for the collections affects the Institution's ability to fulfill its mission as well as its credibility with the American public and donors.

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Our objectives in the overall audit were to assess (1) whether physical security is adequate to safeguard the collections, (2) whether inventory controls are in place and working adequately to ensure that the collections are properly accounted for, and (3) whether collections are properly preserved in compliance with Smithsonian and museum collections management policies and procedures. This report covers the first and third objectives. We describe our audit scope and methodology in detail in Appendix A.

RESULTS IN BRIEF

We found that many of NMAH's collections were stored in substandard conditions. Of the 29 NMAH storage rooms and buildings we tested, we found that the majority were not conducive to the long-term preservation of the collections. NMAH storage equipment, objects' housing and housing practices, and overall storage facilities need improvement. For example, nearly all storage rooms at the museum had exposed pipes and conduits, resulting in frequent leaks that threaten collection items. Some storage buildings are contaminated with asbestos or lead-containing dust. Over-crowding in storage rooms and cabinets has damaged objects.

Although NMAH has used internal Smithsonian funding to improve conditions for certain collections, we found that NMAH did not have a comprehensive preservation program to mitigate the deterioration of objects. We believe that as stewards of the nation's most valued and treasured collections, the Smithsonian should lead the museum community in collections care.

We believe that NMAH's physical security is generally adequate to safeguard the collections; however, improvements are needed to bring collections storage areas up to the Office of Protection Services (OPS) security standards. We tested 220 security devices installed in 19 rooms at NMAH and at 6 offsite storage areas and we found that these devices were working properly. However, we also determined that the Smithsonian had not installed required security devices in all of NMAH's storage areas. Furthermore, both OPS and NMAH need to improve security controls over access to collections storage areas. OPS security officers issued keys to staff and volunteers who lacked proper authorization to access certain collections storage areas. NMAH staff routinely stored keys in unsecured boxes or drawers and did not maintain permanent sign-out logs. These conditions increase the risk of theft and diminish control over collections.

As reported in our previous collections stewardship audits, the lack of security devices in Smithsonian collections storage areas remains a concern. At NMAH, it is of even greater concern considering the size of the collections, number of collections storage rooms and buildings, and the physical condition of these buildings and facilities. Although OPS has planned extensive security upgrade projects, like most Smithsonian organizations, it must compete for scarce resources. There is no assurance that Congress will approve funding for these projects. Based on our current and previous audits, we hope that Smithsonian management will advance its strategic objective of strengthening collections stewardship by continuing to press for funding to address the ongoing need for improved collections security across the Institution.

As noted in ***Concern at the Core: Managing Smithsonian Collections*** (April 2005), the Office of Policy and Analysis' (OP&A) comprehensive study of collections management at the Institution, collections are increasingly at risk because of declining resources to perform basic collections management, such as preservation and collections care. The report specifically noted the deteriorating conditions of NMAH collections storage facilities, as well as the shifting of resources away from collections care. Six years have passed since OP&A issued the report, and it was only in 2010 that the Institution created a pan-Institutional Collections Space Steering

Committee (CSSC) focused on ensuring that collections are preserved and remain accessible for current and future generations. As this Committee works towards accomplishing its goals, we hope that the Institution improves the state of preservation care at NMAH.

To ensure that collections are properly preserved in compliance with Smithsonian and museum collections management policies and procedures, we recommended that the Smithsonian develop a prioritized plan for addressing collections storage needs Institution-wide. We recommended that the Smithsonian establish and implement a Preservation Program and explore opportunities to maximize storage space, replace substandard storage equipment and acquire appropriate housing materials for the NMAH collections. We also recommended that NMAH and the Office of Facilities Engineering and Operations (OFEO) develop and implement a plan to remove and decontaminate objects from storage facilities containing hazardous materials. To ensure that physical security controls over access to the NMAH collections storage areas are adequate, we recommended that the Smithsonian implement security policies and procedures to improve security controls. Lastly, we recommended that the Smithsonian develop and implement a prioritized plan to bring NMAH collections storage areas into compliance with OPS' ***Security Design Criteria***.

We acknowledge that the resources needed to implement the recommendations contained in this report, and in our prior report on inventory controls at NMAH, are considerable. We believe that the recommendations from both reports are interconnected and equally important for strengthening collection stewardship. Therefore, we expect the Institution to provide integrated and comprehensive plans for improving the inventory, preservation, and security controls over the NMAH collections.

BACKGROUND

The National Museum of American History opened to the public in January 1964 as the Museum of History and Technology. In 1980 the Smithsonian changed the museum's name to the National Museum of American History. The museum holds in trust approximately 3.2 million objects[1] that encompass all aspects of the history of the United States. A wide variety of these artifacts, approximately 5,000, are on display at the museum. The remaining collections are stored at NMAH on the Mall, the Smithsonian Institution Services Center (Pennsy Drive) in Landover, MD, and the Museum Support Center (MSC) and the Paul E. Garber Facility in Suitland, MD.

NMAH is one of the Smithsonian's more popular museums, with approximately 4 million visitors in 2010. The museum has recently completed a two-year, $85 million renovation of the building's center core. Major highlights of the renovation were the construction of a new Star-Spangled Banner gallery, expanded public space, and improvements to the 44-year-old building's infrastructure. The museum will be renovating the West Wing public spaces in the next phase of the project, starting in the fall of 2011. During these renovations, some closed exhibit galleries have been converted to temporary collections storage areas to hold thousands of collection objects.

At NMAH, care of the collections is the responsibility of the Office of Curatorial Affairs (OCA) staff. OCA comprises the following departments: Department of History, Department of Affiliations, Department of Collections Management Services, and the Collections Support

[1] Approximately 1.4 million objects are managed by the NMAH Archives. We excluded Archives objects from the scope of this audit.

Office. Our audit focused on two of these departments: Collections Management Services (CMS) and the Department of History. CMS supports the accountability, preservation, and accessibility of the collections in line with the museum's mission. CMS comprises the following departments: Preservation Services, Offsite Storage, Registration Services, and Collections Documentation Services (CDS). At the time we conducted our audit there were seven divisions within the Department of History: Music, Sports, & Entertainment; Military History & Diplomacy; Medicine & Science; Home & Community Life; Politics & Reform; Work & Industry; and Information Technology & Communications.[2] These divisions are responsible for developing exhibitions, public programming, and research based on their collections.

NMAH Collections Storage Areas

Mall Museum - There are over 70 permanent and temporary locations in the NMAH Mall museum where NMAH routinely stores objects. The building has 6 floors, three of which are mainly public and exhibit spaces. The collections storage rooms are primarily located in the basement and the fourth and fifth floors.

OPS and NMAH have identified three high-risk storage areas, which contain the National Numismatic Collection and Military History's Weapons Collection. The National Numismatic Collection is stored in a 4,500-square foot vault room and holds over 860,000 objects, including valuable coins, paper money, medals, decorations, and tokens. The Weapons Collection is stored in two storage locations. A 1,300 square foot room on one floor contains approximately 12,000 firearms and swords. A smaller room on another floor contains ordnance such as ammunition, artillery shells, and heavy weaponry.

Garber Facility - The Paul E. Garber Facility is made up of 31 metal buildings, some of which date from the 1950s. NMAH stores objects in seven of these buildings, which represent approximately 109,000 square feet of storage space. In addition, NMAH uses approximately 12,500 square feet of outdoor space to store objects. The Garber facility houses a variety of objects from rare and antique race cars to large industrial machinery to small hand tools.

Smithsonian Institution Services Center – NMAH occupies over 101,000 square feet of storage space at the Pennsy Drive facility. The NMAH storage space contains mostly crated and large objects such as agricultural equipment.

Museum Support Center – NMAH occupies a 25,000 square foot "Pod" at MSC, a multi-purpose facility built in 1983. Smaller objects are stored in metal cabinets and represent a cross section of the museum's collections. The MSC facility contains a wide variety of objects such as World's Fair memorabilia, antique cameras, and medical tools and supplies.

NMAH Preservation Services

NMAH's Preservation Services is a unit under Collections Management Services in the Office of Curatorial Affairs. Preservation Services supports long-term collections preservation and access by managing programs in conservation treatment, documentation, and research; providing

[2] Effective February 2010 (after we began this audit), NMAH reorganized the Department of History and eliminated the Information Technology and Communications Division. NMAH transferred objects and staff to the remaining divisions. The Department of History also renamed several of the remaining divisions: Military History and Diplomacy is now Armed Forces History; Music, Sports and Entertainment is now Culture and the Arts; and Politics and Reform is now Political History.

preservation training and guidance on collections care; partnering with OFEO to monitor environmental conditions; and managing collections disaster response. There are currently five full-time staff members in the unit. There are three conservation labs located in the basement of the museum building.

Smithsonian Collections Care Initiatives

In fiscal year (FY) 2010, the Smithsonian established the CSSC, whose objectives are to ensure collections are properly housed and accessible; support best practice cost efficiencies and space utilization; promote shared solutions to address common needs; and develop a strategic, integrated approach to addressing collecting units' storage requirements. The Committee has begun to develop both long- and short-term plans for resolving storage problems. We hope that this endeavor will result in the implementation of a cohesive space plan that demonstrates a commitment to improving storage conditions across the Institution.

Earlier, in FY 2006, the Smithsonian established the Collections Care and Preservation Fund (CCPF), an annual federal appropriation, to finance projects that address critical needs in collections care and preservation. Funding is available to eligible units on a competitive basis. CCPF awards are given for projects based on their strategic value, innovation, and organizational excellence.

Smithsonian Collections Management Policy and Implementation Manual

SD 600, ***Collections Management Policy,*** states that preservation is the protection and stabilization of collections, as well as their associated information, through a coordinated set of activities aimed at minimizing chemical, physical, and biological deterioration and damage and preventing loss of intellectual, aesthetic, and monetary value. Preservation is an ongoing process with the goal of making collections available for current and future use.

The SD 600 ***Implementation Manual*** requires each collecting unit to establish minimum standards of physical care and routine schedules for maintenance specific to the nature, purpose, and use of its collections. Collecting units must also establish priorities for the management and preservation of their collections as a whole, in addition to setting priorities for individual collection items.

The SD 600 ***Implementation Manual*** also requires that each collecting unit have a Preservation Program that establishes policies, procedures, and guidelines regarding preservation assessments, preservation imaging, preparation and processing, environmental control, collection disaster preparedness and response, collections maintenance, housing, storage, preservation documentation, conservation treatment, and preservation education and training.

In June 2011, OPS amended the ***Manual*** to include a new chapter titled Collection Space Security Standards. The purpose of these standards is to identify minimum procedural and physical security requirements for those areas where collections are stored or exhibited. These standards should be used in conjunction with other collections related policies such as the ***Security Design Criteria.***

NMAH Collections Management Policy

NMAH's Collections Management Policy (CMP) directs the museum's Collections Program. This program includes planning, acquiring, researching, and providing for the preservation,

proper use, control, and documentation of the museum's objects. The CMP defines preservation as the ongoing process for the protection and stabilization of collections, as well as their associated information, through a coordinated set of activities aimed at minimizing chemical, physical, and biological deterioration and damage, as well as, preventing the loss of intellectual, aesthetic, and monetary value. Preservation includes environmental control, conservation treatment, and collections maintenance. The goal of preservation is to make the collections available for current and future use.

The CMP states that objects must be properly supported and housed at all times using the best techniques and materials available. According to the CMP, preservation priorities are determined by established guidelines, museum program priorities, and periodic reviews of the collections.

The CMP also establishes that NMAH, in coordination with OPS, is responsible for providing adequate security and access control over its collections storage areas that are appropriate for the nature of the objects. The CMP also states that the collections must be routinely monitored for damage and loss. Access to the collections must be balanced with both preservation and security needs.

NMAH Security

The Office of Protection Services, a branch of the Office of Facilities Engineering and Operations, is responsible for the security of staff, visitors, and collections Institution-wide. OPS provides protection and security services and operates programs for security management and some criminal investigations at Smithsonian facilities on and near the National Mall in Washington, DC, New York City, and Panama. Each building or compound has a Security Manager who is in charge of overseeing security for that location. The Security Manager reports to the Area Security Manager, who is responsible for overseeing multiple facilities in a geographic area.

The Technical Security Division (TSD) of OPS provides technical assistance and advisory services to Smithsonian museums, offices, and facilities, as well as maintains and repairs all technical security equipment, such as door access-card readers, cameras, and motion detectors, throughout the Institution. TSD also provides security design and construction support. The System Administration Section of TSD coordinates the repair of system or device failures, preventative maintenance, maintenance contracts, system inspections, and system changes (due to construction or exhibits). The Security Engineering Support (SES) section of TSD is responsible for coordinating and managing the design and installation of security or security-related projects. SES reviews Smithsonian design and construction projects to ensure that they comply with OPS design criteria, standards, programs, policies, and procedures. Another component of TSD is the Locksmith Shop, which provides all lock and key services to facilities and OPS Security Units and Divisions throughout the Smithsonian.

Process for Improving Security

The Smithsonian's Capital Planning Board, with input from Smithsonian's senior leaders, decides which security upgrades it will fund in the course of the annual capital planning process. The Board identifies and prioritizes capital projects, some of which may include major security upgrades to Smithsonian buildings. OPS' Technical Security Division specifies security requirements for these projects based on its security assessments. According to OPS, TSD rarely requests security projects that are not part of a larger capital project unless there is a compelling need, because of the inefficiency of managing many smaller security projects.

The Office of Planning and Project Management (OPPM), in conjunction with other OFEO components, is responsible for ensuring that construction contractors properly install devices that meet OPS security specifications.

RESULTS OF AUDIT

Storage Conditions are Inadequate for Long-Term Preservation

NMAH has not maintained adequate preservation conditions for its collections in storage facilities on the Mall and at offsite locations. We surveyed 29 storage rooms and buildings and determined that the majority are not conducive to the preservation of the collections. In general, we found that storage equipment, objects' housing and housing practices, and overall storage facilities were substandard and in need of improvement. We include our testing results in Appendix C.

OPS' ***Security Design Criteria*** state that collections storage rooms should be free of mechanical and plumbing systems, since they pose a risk of water damage to the objects. This criterion is also included in the Collection Space Security Standards document that will be added to the SD 600 ***Implementation Manual***.

The Smithsonian's Museum Conservation Institute (MCI) has established written environmental standards for maintaining temperature and humidity control in museum buildings that house collections, and OFEO has adopted these standards. In addition, MCI recommends that collections requiring tighter controls should be maintained within a controlled micro-climate, such as a cold storage room.

NMAH has not established minimum written preservation standards specific to the nature, purpose, and use of its collections, as required by the SD 600 ***Implementation Manual.*** For example, NMAH has not developed preservation standards that address collections maintenance, housing, and storage; collections disaster preparedness and response; and preservation education and training.

Storage Equipment Deteriorating or Containing Hazardous Materials

We found that the older storage equipment used in most storage areas contained potentially damaging or hazardous materials such as untreated wood, lead paint, arsenic-coated felt, and paradichlorobenzene.[3] NMAH conservation staff explained that objects stored in untreated wood cabinets were subject to off-gassing, which can damage metal objects after prolonged exposure. We observed that metal glass-front cabinets were

Rubber gaskets on a cabinet storing barometers and other items from the Medicine & Science Division has deteriorated and liquefied, risking damage to objects.

[3] Paradichlorobenzene is the chemical that is commonly used in mothballs. It has a strong odor and can crystallize on collection objects and pose health risks to the staff.

used extensively to store objects throughout all storage locations. NMAH preservation staff explained that the rubber gaskets on many of these cabinets were deteriorating and liquefying. The liquefied rubber could cause damage to the objects. We observed evidence of this problem in several storage cabinets, including a cabinet containing barometers in the Medicine & Science Division (see image on previous page).

Mercury leaks from a barometer into a beaker, posing health risks to staff.

Also within this Medicine & Science Division cabinet, we observed a barometer that was leaking mercury, a hazardous substance. The staff placed a glass container in a plastic bag underneath the leak to catch the mercury. This is especially dangerous because mercury vapors accumulating within the sealed cabinet could pose health risks to exposed staff.

We observed cabinets that could not close properly and others that were often difficult to open, especially with wooden drawers that swell with humidity. Drawers that are difficult to open could damage objects as staff attempt to pull the drawer out.

Poor Facilities Control

Nearly all of the collections storage rooms at the museum had exposed pipes and conduits, resulting in frequent leaks in many rooms. We observed several rooms in various divisions with active water leaks where the water was being collected in buckets in the middle of aisles. Because of the likelihood of leaks, almost every division occupied a storage room where shelving and objects were covered in plastic sheeting. Unfortunately, plastic sheeting may result in the creation of micro-environments where it is warmer or more humid under the plastic than the rest of the room, which may cause the growth of mold and mildew on objects.

Several water buckets in a Work & Industry storage room are collecting water leaking from steam conduits running through the room.

Plastic draped over storage equipment and buckets in the aisle show evidence of frequent and ongoing water leaks from the HVAC system in a Music, Sports, and Entertainment Division storage room.

In addition, we found that the museum has had a history of problems maintaining proper environmental conditions within the Cold Storage Room, where the refrigeration equipment has exceeded its useful life. The humidity level is difficult to maintain and fluctuates depending on the weather.[4] OFEO has only performed patchwork repairs as the equipment has failed. These failures have caused severe water leaks in the room, which contains fur coats and other clothing items from the Division of Home & Community Life's costume collection, resulting in damage to some of the objects as well as to storage equipment. The division is currently using temporary equipment until a permanent replacement can be purchased.

Catastrophic failures of the HVAC system in Home & Community Life's Cold Storage Room have resulted in severe leaks, damaging both objects and the storage equipment in the room. The system has exceeded its useful life and needs to be replaced. Stable environmental conditions can no longer be maintained in the room.

Approximately 400,000 objects stored at the offsite Garber facility are especially at risk of damage because these buildings have exceeded their intended useful lives. These storage buildings were supposed to be temporary structures. Buildings 15-19 and 28 were built between 1950 and 1960, while Building 31 was built more recently, in 1994. A "Structural Vulnerability Assessment" done at the Garber Facility in 2010 found that 5 of 7 buildings occupied by NMAH are "not considered adequate for anticipated snow/wind." With the collapse of NASM storage Building 21 in February 2010 from snow and wind, this finding is especially concerning.

After the 2010 collapse of a NASM storage building at the Garber Facility, OFEO conducted an assessment on the remaining storage facilities at Garber. The Institution determined that many of the buildings, several of which store NMAH collections, were not capable of withstanding significant snow and wind. These buildings were meant to be temporary structures and have exceeded their intended useful lives.

[4] The standard humidity level is 30-40%; however, during a visit when it was raining, we observed the humidity to be 69%.

At Garber, we also observed approximately 12,500 square feet of outdoor space filled with collection objects. These objects were sitting on the ground, exposed to the elements, and have been for many years. As a result, the objects were in various stages of deterioration.

NMAH collection objects occupy 12,500 square feet of outdoor "storage space" at the Garber Facility. The objects have been left exposed to the elements for many years and are in various stages of deterioration. According to the museum, the objects are part of several NMAH collections: military history, manufacturing, maritime, transportation, and agriculture.

Storage Buildings Contaminated with Asbestos or Lead-Containing Dust

At the Garber Facility, there were four buildings that contained asbestos. In June 1998 the Institution completed the decontamination of Building 17. However, three buildings (15, 16, and 18) have fragile asbestos containments that are failing, and Building 16 contains collections that are contaminated with asbestos. Further, Buildings 15 and 18 are contaminated with lead-containing dust.[5] As a result, these three buildings and the objects stored within them are inaccessible except by staff members trained to wear the appropriate protective gear. These buildings have exceeded their useful life and pose an environmental risk to the staff and the surrounding community. We also found one collection storage room in the Mall museum basement contaminated with lead dust. Because of the contamination, these objects are not available for use unless they are decontaminated. According to CMS, the decontamination process is expensive and may damage the objects.

Asbestos and lead-containing dust contamination make three of NMAH's seven storage buildings at the Garber Facility inaccessible without special protective gear. These buildings contain approximately 400,000 objects that are currently unavailable for use.

[5] Garber Buildings 15 and 18 house many objects that contain lead, which results in lead-containing dust in the buildings.

Objects Inappropriately Housed and Poor Housing Practices

Our testing found that housing and housing practices were not ideal for the preservation of many of the objects in NMAH storage facilities. We often observed objects stored loose in drawers or boxes without proper support or padding. As a result, the objects would roll or slide around whenever the drawer or box was moved, increasing the risk of objects hitting each other and causing damage. With objects such as coins and medals that have raised surfaces, repeated sliding against hard surfaces, such as the bottom of a box, could wear down the details on the object, significantly decreasing its historical and intrinsic value.

NMAH also hung objects on walls or stored them on open racking, putting them at risk of falling and being damaged. For example, the curatorial staff hung a collection of whaling harpoons on a wall in a narrow aisle within a collection storage room. These sharp and dangerous objects could easily be bumped into and fall, not only risking damage to the object but to staff as well. A similar situation exists in the Military History sword collection, another collection of potentially dangerous objects. The curatorial staff stored the collection on open racking, with the handles hanging off the shelf. The swords are not secured to the shelving and could easily be knocked off, again risking damage to the objects and staff. NMAH should store both of these collections in cabinets appropriate for their preservation and security.

Many storage rooms were overcrowded to the point that objects are at risk of damage or have already been damaged. For example, a Military History Division cabinet containing World War I-era United States flags was so full that flags were scraping against the drawer above it every time the drawer was opened. In addition, these objects remain stored in original housing materials, which are inappropriate for long-term preservation of the objects. These storage conditions resulted in irreparable damage to the flags.

Dozens of sharp whaling harpoons hang along a wall of a narrow aisle in this Work & Industry Division storage area.

Thousands of unsecured swords are stored on open shelves in this Military History & Diplomacy Division storage room. The swords hang off the edge of the shelves.

This World War I-era United States flag in the Military History & Diplomacy Division's collection has been irreparably damaged due to substandard storage practices and housing materials. There are several flags stored similarly within this storage room.

Overcrowded storage rooms have also resulted in objects being stored on the floor or on top of cabinets, where they are exposed to excessive light, dust, water, and other hazards. Objects stored on top of cabinets also pose safety risks to staff and may be damaged if they were to fall. In the ceramics and glass storage rooms, staff stored heavy, fragile objects in this manner.

This storage room for a collection of ceramic pottery from the Home & Community Life Division is overcrowded. As a result, fragile and heavy objects have been placed on top of tall cabinets. In addition to the risk of falling and breaking and injuring staff, they are exposed to excessive light, dust, and potential water leaks.

Overcrowded and poorly lit storage facilities also posed accessibility issues. We observed numerous storage locations on the Mall and offsite where narrow aisles, cabinets blocking other cabinets, and high shelving made it very difficult and in some cases dangerous to access objects. Objects stored under these conditions are not available for preservation assessments and are not likely to be used for exhibits or research purposes. Poor or nonexistent lighting in several storage rooms and buildings not only made it difficult to identify and access objects, but also posed a safety hazard.

* * * *

NMAH is unable to maintain standard and appropriate storage conditions for its collections because:

- According to Smithsonian management, many of the current storage conditions are the result of past preservation standards and practices that are no longer suitable or appropriate for the NMAH collections. However, collections storage conditions have also deteriorated because the museum has not fully funded many aspects of collections preservation such as the establishment of a collection maintenance program. Moreover, the Museum no longer has the resources for basic preservation training of OCA staff on a regular basis. In addition, the curatorial divisions lacked funding to replace aging and substandard equipment and purchase appropriate housing materials. On a much larger scale, the lack of funding has also prevented the Institution from providing additional and much needed permanent storage facilities, as well as from decontaminating facilities containing hazardous materials. As documented in the 2005 report, ***Concern at the Core: Managing Smithsonian Collections,*** the Institution has been aware of these issues for many years. However, it has not developed and implemented a long-term plan to resolve these issues.

- Some storage rooms were not designed for collections storage and most are not appropriate for long-term storage of objects because they also contain heating, ventilation, and air conditioning (HVAC) conduits and water piping in nearly all storage rooms. The HVAC system throughout the museum building contains steam reheats, which use steam to regulate temperature. A breakdown in this system releases steam and water into the collections storage rooms, causing leaks and damage to the objects. As a result, many of the storage rooms in the museum have regular problems with water leaks, resulting in damage to objects and mold growth, which is a hazard not only for objects, but may be to the staff as well. In 2005, OFEO initiated a pilot project to install electric reheat coils in two collections storage rooms, removing one source of potential leaks.

A large steam pipe and a smaller water pipe run through a Music, Sports, and Entertainment storage room which contains thousands of sound recordings (vinyl records). The objects are stacked up to, and in some areas, over the pipes. The shelving below the pipes is draped in plastic to protect the objects from water damage.

- NMAH Public Space Renewal Project (PSRP) has had a negative impact on some collections storage areas. In some cases, storage rooms were shrunk drastically to make room for the sky-light, new conduits and pipes, and for additional elevators. This decrease in storage space will most likely lead to additional overcrowding. Moreover, objects were temporarily relocated to rooms with inadequate lighting, equipment, and security.

This Medicine & Science Division storage room size was reduced drastically due to the PSRP renovations. In addition, various conduits were run through the room, including water, natural gas, HVAC, and sewage. This room was described as the "worst room" in the museum by CMS management. Both CMS and OFEO agreed that collections should not be stored here.

- NMAH has not developed a comprehensive preservation program, which would establish formal preservation standards for the physical care of its collections. As discussed in the following audit finding, a lack of staff and decreasing resources has prevented the museum from developing, implementing, and maintaining a permanent preservation program, instead of relying on short-term funding to support a limited number of preservation projects.

- Even though OFEO has established environmental standards, the age and configuration of the mall building HVAC system creates additional challenges for maintaining consistent temperature and humidity levels within storage rooms. Moreover, OFEO cannot provide specific temperature and humidity controls in every storage room. Some curatorial staff reported frequent fluctuations outside of the levels established and maintained by OFEO. Stable environmental conditions are a significant factor in the preservation of objects, and sharp variances outside of established ranges can damage most materials.

Although offsite storage facilities such as Pennsy Drive and MSC have provided significantly improved conditions, the majority of the museum's collections remain in overcrowded and inadequate spaces on the Mall and at the Garber facility. As of the completion of this audit, the CSSC has completed a survey of collections storage areas and developed a plan to address the more immediate needs at the Garber facility in FY 2013. We hope that the Smithsonian continues with its commitment to improve preservation conditions. Until storage conditions are improved, objects will remain at risk and the museum will not be able to fulfill its mission of long-term collections preservation. Inadequate storage conditions have contributed to the damage of objects; the unavailability of objects for exhibits, research, loans and education; and increased costs to stabilize and standardize collections and storage areas. The Institution and museum could also be vulnerable to charges of poor stewardship of the collections.

Recommendations

To better ensure long-term preservation of the Smithsonian collections, we recommend that the Deputy Under Secretary for Collections and Interdisciplinary Support, in coordination with the Director, OFEO:

1. Develop a prioritized plan for addressing collections storage needs Institution-wide that identifies possibilities for acquiring storage space.

To improve conditions in collections storage areas to ensure long-term preservation of the NMAH collections, we recommend that the Under Secretary for History, Art and Culture, in coordination with the Director, NMAH:

2. Explore opportunities to increase available space, including ways to maximize existing storage space.

3. Develop, fund, and implement a prioritized plan to replace substandard storage equipment and housing with appropriate materials.

To improve access to collections stored in contaminated storage areas and address the safety risks associated with the contaminated buildings, we recommend that the Directors of OFEO and NMAH, in coordination with the Under Secretary for History, Art and Culture:

4. Develop and implement a plan to decontaminate objects and storage facilities containing hazardous materials.

NMAH Lacks a Comprehensive Preservation Program

NMAH does not have a comprehensive preservation program, as required by Smithsonian policy. Resources have significantly decreased over the last 20 years, resulting in an understaffed division and insufficient funding to purchase necessary supplies, conduct preventative treatment of objects, and limited continuing education opportunities for preservation and curatorial staff. Without a cohesive preservation program, the museum cannot mitigate the deterioration of the objects. The Institution faces the possibility of losing the educational, research, and exhibit value of these objects and may be vulnerable to charges of poor trusteeship as caretakers of the public collections.

As of FY 2011, the Institution has awarded over $10 million in CCPF funding for collections care and preservation projects. Since FY 2005, NMAH has received over $1.2 million of these funds to meet the most urgent inventory and preservation needs. For example, CCPF awards were used to stabilize, re-house, and purchase new equipment for the military history uniforms, the agriculture and natural resources, and the medical history collections. Ongoing preservation projects also included the conservation treatment of the Jefferson Bible.[6] Staff and resources provided by these awards, however, are temporary and do not solve all of the museum's long-term preservation needs. See Appendix D for photographs showing how additional funding for preservation projects has improved equipment, housing, and housing practices for some NMAH collections.

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NMAH's inability to develop and resource a comprehensive preservation program is the result of several causes:

- The Smithsonian and NMAH have not been able to maintain staffing levels within the Preservation Services division necessary to maintain a minimum level of care for the museum's collections. Staffing levels have decreased 71% since 1990, from 17 staff members to only 5 in 2010. During the same period, the museum's collections have grown 5%, from approximately 3 million in 1990 to 3.2 million in 2010.[7] According to NMAH CMS, a minimum of 12 staff are needed in Preservation Services to provide basic care for the collections. In its 2009 budget request to the Smithsonian Office of Planning, Management, and Budget, the museum requested eight additional staff to restore preservation staffing levels. Smithsonian management did not include NMAH's request for additional preservation staff in its comprehensive budget submission to Congress.

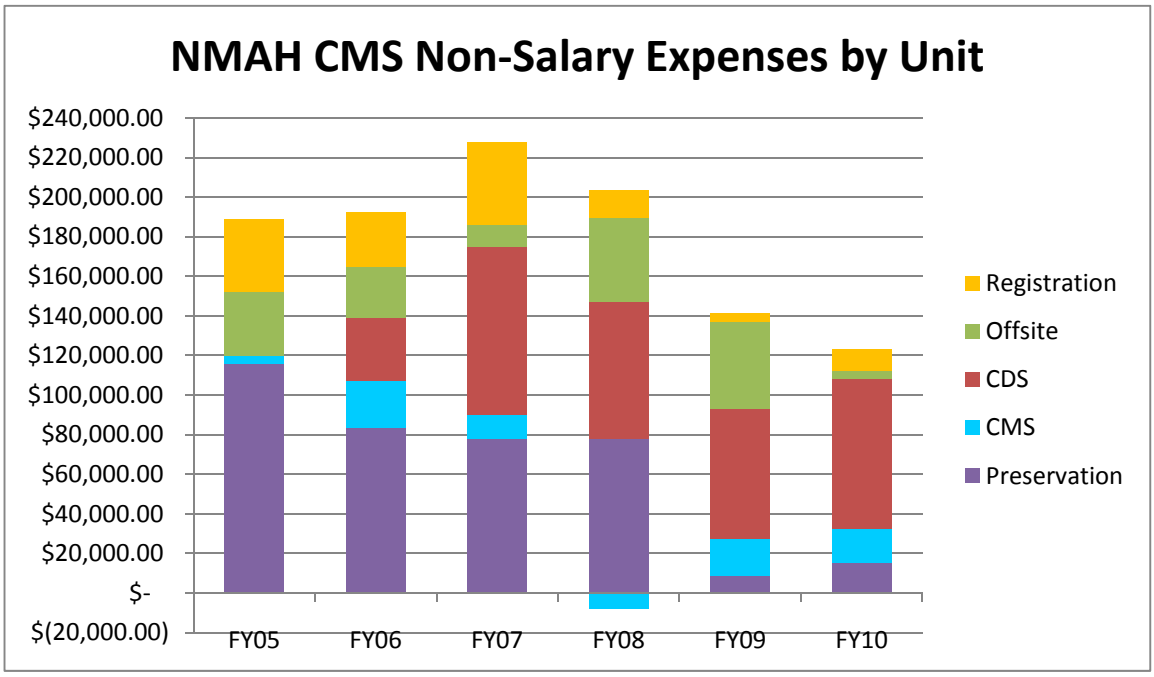
  According to NMAH management, museum specialists have historically performed preservation duties within their divisions. NMAH management explained that when 41 museum specialists were converted to curatorial positions in 2005, many of these responsibilities were overlooked as staff took on the added curatorial duties. We note that many of the converted museum specialists were not actively performing preservation duties prior to the conversion.

[6] Thomas Jefferson's bible, ***The Life and Morals of Jesus of Nazareth***, is a small handmade book that provides a view of Jefferson's private religious and moral philosophy.

[7] This figure includes NMAH Archives Collection, for which the Preservation Services Division performs conservation services.

- In addition to reductions in staff, the museum has not placed a priority on Preservation Services. While salaries for Preservation Services staff has remained relatively constant, non-salary expenses significantly declined from over $115,000 in FY 2005 to only $15,000 in FY 2010.

  According to CMS management, in order to avoid the imminent shut down of the collections information system (CIS), CMS made the difficult decision to fund the system at the expense of preservation services. Similarly, CMS is funding digitization projects with resources that NMAH could have used to support Preservation Services. Additionally, when available, the museum spends resources on the conservation of objects to be exhibited or loaned, and not on the other aspects of a preservation program. These practices have resulted in inadequate funding for preservation supplies and training to adequately assess and protect objects from damage and deterioration. For example, the museum can no longer afford to purchase acid-free housing materials such as boxes, folders, tissue paper, and shelf-liners. In addition, Preservation Services staff are unable to obtain continuing education on proper object care techniques and lack the resources to train curatorial staff on appropriate preservation techniques.



- Lastly, total expenses for preservation services, including salaries and benefits, are less than average levels within the museum community. According to Heritage Preservation and the Institute of Museum and Library Services' ***A Public Trust at Risk: the Heritage Health Index Report on the State of America's Collections*** (2005)[8] medium to large institutions spend approximately 5% of their budgets on preservation expenses. According to the ***Index***, inadequate staffing and funding contribute to the damage or loss of collections. From FY 2005 to FY 2010, NMAH spent, on average, less than 3% of its federal and trust allocations on preservation expenses.

[8] NMAH participated in this comprehensive survey on the condition and preservation needs of all United States collections held in public trust; it consisted of responses from 3,239 museums and institutions nationwide.

The lack of resources devoted to preservation care means the museum can no longer maintain a minimal level of care or implement a comprehensive Preservation Program as required by SD 600. We are concerned that NMAH's failure to adequately resource and plan for preservation needs puts the collections at significant risk. The longer an object is allowed to deteriorate, the higher the costs will be to preserve the object. NMAH has emphasized in its budget requests that the deterioration of the collections cannot be mitigated and artifacts are at high risk of damage and loss. If these conditions persist, the museum will be vulnerable to charges of poor trusteeship in its role as caretaker of the national collections.

Diminishing resources have impeded NMAH's ability to maintain adequate preservation conditions. The museum provides limited preservation support services for exhibits and loans. For the majority of the NMAH collection it has not been able to proactively address the preservation needs, maintain adequate preservation supplies and equipment to better house and store objects; conduct regular preservation assessments and object conservation; research preservation best practices to develop and implement minimum standards of care; attend preservation education training; re-train NMAH staff; monitor environmental conditions; and develop comprehensive disaster preparedness plans.

Recommendation

To comply with the Smithsonian's collections management policy and to help ensure adequate preservation of NMAH collections, we recommend that the Director, NMAH, in coordination with the Under Secretary for History, Art and Culture:

5. Establish and implement a Preservation Program, as required by SD 600, to include prioritized plans for conducting staffing and preservation assessments, as well as preservation and curatorial staff training.

Collections Storage Security Is Not Up to OPS Standards

Similar to what we reported in our NASM audit, the Smithsonian has not installed required security devices in all of NMAH's collections storage areas. The missing security devices diminished controls necessary to prevent and detect theft of collections. If thefts do occur, it will be difficult, if not impossible, for the Smithsonian to identify when or how the thefts occurred or who was involved because there would be no electronic or other record of who accessed the collections area.

Smithsonian ***Security Design Criteria*** stipulate the security devices that must be installed in collections storage areas. We conducted our testing using the Medium risk level requirements, which is the default level established in the ***Criteria.*** This risk level requires the following devices: door contacts ("magnetic switches"), a lockable door, camera coverage of the entrance, motion sensors on entry points, vibration sensors on walls, card readers, and arm/disarm panels.

NMAH's collections storage areas on the Mall do not meet the standards set by OPS's TSD ***Security Design Criteria***. Nearly all collections storage areas we reviewed at the museum (14 out of 19) lack all but the most basic security devices, such as door contacts. Three of the five areas that met security standards were temporary spaces created during the PSRP II renovation project.

The other two areas were permanent storage areas for the museum's highest risk collections: the National Numismatics Collection and the Division of Military History & Diplomacy's firearms collection. With the exception of the three contaminated buildings at the Garber Facility, offsite storage locations appear to have most security devices installed.

We tested over 220 security devices in 19 rooms at NMAH and at 6 offsite storage areas. We did not identify any significant problems with the functionality of these devices. However, we found that several storage rooms have more than one door, but the door signs do not accurately reflect the current layout of the storage areas. As a result, security officers responding to alarms could be directed to the incorrect location.

We found that a majority of the collections storage areas at NMAH were put on alarm schedules that deactivated security devices during the day. As a result, no activity or alarms are recorded for these locations during the scheduled hours. This practice is not in accordance with OPS policy; however, OPS management allows it as a matter of convenience because these doors do not have card readers. If the security devices were active during the day, the Control Room would receive an alarm each time a door opened and would have to dispatch an officer to investigate. According to TSD management, doing so would be a major hindrance in the performance of the Control Room Officer's duties, and OPS has accepted the risks associated with this practice.

* * * *

The Smithsonian did not install security devices to the extent required by OPS standards because:

- OPS' practice for requesting security upgrade funding is primarily tied to capital projects, rather than small stand-alone security upgrades for specific rooms. OPS management explained that they were aware that they are not in compliance with their own security standards. However, they expect to address the necessary upgrades as new capital projects are completed. In FY 2014, OPS plans to request $1 million for a comprehensive security modernization of NMAH collections storage rooms. In addition, in FY 2012, OPS plans to request $100,000 for collections security upgrades across the Institution in their maintenance budget. OPS plans to continue this request annually beginning in FY 2014.

  Although the Smithsonian has not fully upgraded security devices in NMAH collections storage areas, some recent security upgrades have been completed with financial assistance from the NMAH divisions and OFEO. For example, in 2008 OPS and the Military History & Diplomacy Division shared the costs of installing a surveillance camera outside one of their storage rooms. In 2010, as a result of the PSRP II project, the Smithsonian completed extensive security upgrades to a small storage room for the Home & Community Life Division. In 2011, the Smithsonian has budgeted $70,000 for security upgrades in two additional storage rooms within the Home & Community Life and Military History & Diplomacy Divisions.

- Because of poor communication between NMAH and OPS, OPS was not aware that a collection storage area contained a highly sensitive collection, which included weapons. Therefore, OPS did not apply the appropriate security standards to this storage room.

- Asbestos insulation covers the infrastructure in the contaminated buildings at the Garber Facility. OPS cannot safely install security devices in any of these buildings prior to decontamination due to the failure of the asbestos containments and the lead-containing dust.

Security devices such as card readers and cameras provide an electronic record of who accessed an area, when it was accessed, and where the access took place. In the event of a theft, information recorded by these devices would be essential to an investigation. Failure to implement these standards exposes the museum to an increased risk of theft, loss, or damage to objects, especially in areas where valuable and sensitive collections are stored.

Recommendation

To strengthen physical controls over access to the NMAH collections storage areas and to bring collections storage areas up to OPS standards, we recommend that the, Director, OFEO, in coordination with the Under Secretary for Finance and Administration:

6. Develop and implement a prioritized plan, in line with the findings of the CSSC survey, to bring NMAH collections storage areas into compliance with OPS' ***Collection Space Security Standards*** and the ***Security Design Criteria***.

OPS and NMAH Have Not Maintained Adequate Control Over Access to Collections Storage Areas

Similar to what we reported in our audits of NMNH and NASM, security controls at NMAH facilities were not working as intended. Although we found that security devices at NMAH were functioning properly, we determined that OPS and NMAH staff needed to improve security controls over key and electronic card reader access to collections storage areas, especially access granted to volunteers. In addition, we determined that several individuals with unlimited access the National Numismatics Collection had no record of an OPS background investigation.

OPS ***Key and Lock Policy***, revised February 2011, states that Smithsonian employees and affiliated staff who frequently require keys to collections storage and high security areas to perform their duties and responsibilities may sign keys out from the security unit, as needed, and return them at the end of their shift. The security unit maintains a Key Authorization List containing the names of such employees and affiliated staff authorized to sign out keys, as designated by the Security Manager and Building Director. The policy also requires that the Security Manager conduct bi-annual inventories of keys to high security areas.

OPS' ***Identity Management Handbook*** requires that all employees and affiliated staff, including volunteers and researchers, receive an appropriate background investigation and official Smithsonian credential if their association with the Institution is for more than 30 days and they require unsupervised access to staff-only areas of Smithsonian controlled facilities or areas.

The SD 600 ***Implementation Manual*** requires each collecting unit to develop a written, approved policy for permitting responsible access to collections, collections storage, and collections documentation. This policy should regulate access of all persons, including collecting unit staff, visitors, contractors, volunteers, and docents.

Weak Controls Over Keys

Since the majority of NMAH's storage rooms are not outfitted with proximity card readers, access to these rooms is controlled through keys and locks. Neither OPS nor unit personnel adequately controlled keys, diminishing the effectiveness of locked doors as a security device. To access collections storage areas, museum staff sign out multiple keys to collections storage areas from the NMAH Security Office. We found that OPS security officers issued keys to staff and volunteers who lacked proper authorization to access certain collections storage areas. For example, one NMAH staff member was allowed to sign out a key under another employee's name. This individual was not authorized to sign out any keys. In another example, a volunteer in the National Numismatics Collection signed out the key to the Numismatics suite several times a month during the period August 2010 to October 2010, although his name had been removed from the Key Authorization List several months earlier. This volunteer also had card reader access to the Numismatics vault and therefore had unsupervised and unrestricted access to a highly valuable and easily pilfered collection.

We also observed poor controls over keys to storage rooms and inconsistent practices on locking cabinets within these storage rooms. Once the division staff signed out keys to their respective storage rooms, keys were then stored in unsecured key boxes or drawers, accessible by fellow division staff. Each division has its own lockbox, with varying levels of security controls, where the keys are kept during the day. The security over these lockboxes was inadequate, with little, if any, actual controls. For example, NMAH divisions did not maintain sign-out logs. One division recorded sign-out activity on a dry-erase board, eliminating any historical records of access. And when we conducted a sample inventory of the collections (during our audit of inventory controls), we observed numerous instances where cabinets containing valuable collections were not locked.

We found that keys were not always returned at the end of the day. In our discussions with NMAH and OPS staff we learned that, in most cases, the person who signed out the keys was not the same person who returned them. We also observed that lockboxes in the NMAH Security Office were poorly organized and contained many keys no longer in use. During our tests, we observed security staff having difficulty identifying keys needed to open storage rooms.

We are also concerned that improved controls over the OPS key sign-out process do little to ensure that access to collections storage areas is properly controlled by the curatorial staff. Until the Smithsonian has installed card readers with appropriate access limited to authorized staff, the museum will never achieve proper control over its collections storage areas.

Poor Control Over Electronic Card Reader Access

We determined that there were poor controls over non-employees who have access to the Numismatics Suite. In addition to current curatorial staff and security officers, 23 individuals had card reader access to the Numismatics offices and vault. Numismatics staff could only identify 10 of the 23 individuals as current volunteers, interns, or researchers. Of the remaining 13 individuals, the Numismatics staff identified six as previous volunteers or interns; could not identify six; and identified one as deceased. We provided OPS Personnel Security Office with the names of the 23 individuals. OPS confirmed that there were no records of background screenings for most of these individuals, including three current volunteers. OPS believes that the unscreened volunteers received their badges before May 2007, when the Smithsonian instituted a policy of conducting background investigations on non-employees. After we alerted OPS, the Personnel Security Office disabled the badges for the individuals with no background investigation record.

We also found that there was no comprehensive listing of current volunteers. In addition, not all of the museum's volunteers were tracked by the Smithsonian's Visitor Information and Associates' Reception Center (VIARC). NMAH divisions inform VIARC of volunteers and researchers and voluntarily provide VIARC with monthly volunteer attendance reports. VIARC only maintains this information for volunteers that they are monitoring. Since some volunteer and researcher arrangements are made without VIARC's knowledge, it is possible for a museum or division to have volunteers who are not monitored by VIARC. VIARC continues to track volunteer hours until the division informs them that the volunteer is no longer active. We identified several volunteers on the VIARC report who have no hours reported in FY 2010 and FY 2011. However, the division continues to identify these individuals as "current volunteers."

NMAH is responsible for requesting card reader access to storage areas for the volunteers. When the volunteer leaves, the museum is also responsible for contacting OPS so that any electronic access can be deactivated. Although VIARC tracks hours reported by the museum, it cannot request a deactivation of electronic access, even though they have observed that no volunteer hours have been reported for the individual for an extended period of time.

We also identified several NMAH staff with electronic access to collections other than their division's collections. In accordance with the ***Smithsonian's Collection Space Security Standards,*** access to collections space should be limited to the minimum number of staff whose official duties require frequent and regular access. While many of these rooms have since been emptied of objects in preparation for the PSRP renovation, they served as temporary storage rooms during earlier renovations and at least one room still contained valuable political history objects during our audit.

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OPS and NMAH did not have adequate control over access to collections storage areas because:

- OPS did not have a comprehensive Key Authorization List. Without such a list, OPS could not ensure that only authorized staff signed out keys. In fact, OPS relied on an incomplete and poorly organized list that was prepared and maintained by the Office of Curatorial Affairs. In addition, several divisions had not provided OPS with key access information for some storage rooms. However, OPS allowed staff to regularly sign out keys to these rooms. Lastly, the OPS Security Manager did not conduct a bi-annual review of the Key Authorization List to ensure that the information was up-to-date. When we notified the Security Manager of these problems, he took immediate action to ensure that the officers were verifying every employee to the official Key Authorization Lists on file. Any staff members who were not on the lists were denied keys until the division provided OPS with updated authorizations.

- OPS had not conducted an inventory of high security keys to determine what keys were still valid. As a result, the OPS key box contained multiple keys, many whose purposes are unknown, making it more difficult to quickly locate needed keys. OPS did not want to dispose of the unidentified keys out of concern that they might be needed.

- OPS and NMAH did not review card reader access reports on a regular basis to verify whether an individual had a continued need for access to collection storage areas. Although this requirement was included in previous OPS policies and procedures, it was excluded from revised policies and procedures.

- NMAH did not adequately oversee volunteers in the Numismatics collection storage area. We identified several volunteers with unlimited and unsupervised access to the collection storage area. We were told by museum staff that access levels may have been elevated to relieve staff from having to escort volunteers in and out of the storage area. We believe that NMAH practices should be more in line with practices at other Smithsonian units where volunteers have little or no access to high-value collections storage areas and must be escorted into, and supervised while working with, these collections.

  Background investigations had not been conducted for all volunteers on the card reader access report because many had become volunteers before the SI policy was implemented. We found several volunteers, both former and current, who have no record of an OPS background investigation. During the audit, the OPS Personnel Security Division disabled access for these individuals.

  In addition, NMAH was not informing OPS that volunteers were no longer active and requesting that their electronic access be deactivated. In some cases, volunteers are intermittent, or even seasonal. Museum staff are reluctant to request the deactivation of the volunteers' identification badges because they believe the volunteer will eventually return.

- The museum has no clear policy on locking cabinets. Some staff believe that it is redundant to lock cabinets if the doors to the room are locked. Others believe that cabinets should be locked.

Poor controls over access to collections storage areas expose NMAH to an increased risk of theft, loss or damage to objects. Inadequate control over keys reduces the effectiveness of locked doors as a security device, compromising physical access controls for secure areas. Inappropriate access levels diffuse the effectiveness of card reader systems and places the collections at greater risk.

As we noted in our report on inventory controls at NMAH, many divisions are plagued by incomplete records and therefore would have difficulty proving that they had objects in their collections or that objects were missing. The combination of poor records and poor access controls compounds the risks to these valuable collections.

Recommendations

To strengthen controls over access to collections storage areas, we recommend that the Director, OFEO, in conjunction with the Under Secretary for Finance and Administration:

7. Install card readers on all NMAH collections storage areas, working in a prioritized manner, if necessary, starting with the more sensitive collection storage areas.

In the interim, we recommend that the Director, OPS in coordination with the Director, NMAH, where applicable:

8. Request updated Key Authorization Lists from NMAH Division chairs, develop a comprehensive report of authorized staff, and ensure compliance with OPS policies regarding keys.

9. Conduct regular inventories of NMAH collections storage keys, as required by OPS policy.

10. Develop and implement OPS policies and procedures requiring the Technical Security Division and Security Managers to work with NMAH Division Chairs to review card reader access lists on a regular basis to ensure that access to collection storage areas is appropriate.

To strengthen oversight of access to collections storage areas, we recommend that the Director, NMAH:

11. Develop a written policy for permitting responsible access to collections documentation and collections storage areas, including improved controls over key and card reader access, as required by the SD 600 ***Implementation Manual*** and the ***Collection Space Security Standards***.

Improper Segregation of Duties in NMAH's CIS

NMAH is not ensuring that an adequate separation of duties exists between employees and contractors with access to both the collections and collections records. We identified two staff members and one contractor assigned to the Collections Documentation Services (CDS) division with access to several collections storage areas, as well as CIS access levels allowing them to edit and delete object records. In addition, we identified two Registration Services staff members who, without authority, routinely signed out the keys to a collection storage room shared by the Medicine & Science and Work & Industry Divisions. Not only did these staff members have unsupervised access to the collections, one also had unrestricted access to all paper accession files for the museum's collections.

A traditional control technique in inventory management is to separate the responsibilities for managing objects and maintaining object records. Separating these duties minimizes the risk of records being adjusted to mask theft or loss. SD 600 states that collections units must ensure adequate separation of duties and other internal controls to minimize the possible unauthorized removal of collections items and corresponding records. The SD 600 ***Implementation Manual*** further explains that there may be different levels of separation based on the value of the collections; while high-value collections may need full separation of duties, other collections may only need an audit trail to track changes. It also states that where separation of duties is not possible, other compensating controls should be implemented to minimize any risks.

This condition was a result of insufficient collections management staff. To compensate for limited staff, OCA allowed staff and contractors unrestricted access to both the objects and the paper and electronic records, which they believed was necessary to inventory objects and to assist curatorial staff with the movement of objects.

Without proper separation of duties it would be possible for an employee to remove an object from the collections and eliminate any associated records, reducing the likelihood of detection.

Recommendation

To prevent staff and contractors from having unrestricted access to both objects and object records, we recommend that the Director, NMAH:

12. Ensure that CMS staff and contractors with the ability to delete or remove records do not have key and card reader access to the collections.

MANAGEMENT RESPONSE

The Under Secretaries for History Art and Culture (OUSHAC) and Finance and Administration (OUSFA), the Deputy Under Secretary for Collections and Interdisciplinary Support (DUSCIS), the Acting Director of NMAH, and the Directors of OFEO and OPS provided a consolidated formal written response to our September 12, 2011 draft report. In their September 23, 2011 response, they generally concurred with all findings and recommendations. Smithsonian and museum management acknowledge that "collections stewardship is among the Smithsonian's highest priorities and in some cases the greatest challenge." They agreed that the Smithsonian has not adequately addressed or implemented improvements to storage conditions or fully complied with security standards. Further, Smithsonian and Museum management recognize that improvement requires the implementation of responsive, prioritized, and funded plans.

The Smithsonian believes that the report minimizes the recent accomplishments of NMAH in developing its collections care methodology. Further, management believes that with targeted funding the Smithsonian, including NMAH, has made significant progress to improve the management, care, and accessibility of collections.

Finally, the Smithsonian, using available resources, will strive for short-term solutions to address issues identified at NMAH and will attempt to fund long-term solutions through budget requests and private donations.

Below, we summarize their comments and then offer our responses to those comments.

Recommendation 1. Concur. The National Collections Program and the Office Planning and Project Management, through the CSSC, will develop a collection space plan highlighting near-term, intermediate, and long-term collections storage requirements. The DUSCIS, in coordination with the Director, OFEO has proposed to complete corrective action by September 30, 2012.

Recommendation 2. Concur. Smithsonian management has contracted an architect and engineering firm to support the CSSC's planning efforts to maximize existing space and examine options to acquire new space. The OUSHAC in coordination with the Director, NMAH has proposed to complete corrective action by September 30, 2012.

Recommendation 3. Concur with clarification. NMAH will take steps to prioritize storage equipment needs using CSSC's collections space survey data and will establish and outline priorities by September 30, 2012. Funding and implementation of the plan requires additional resources, therefore the OUSHAC and the Director, NMAH cannot estimate a completion date.

Recommendation 4. Concur with clarification. Smithsonian management does not believe that contaminated storage areas at the Garber Facility pose a public or employee safety hazard requiring immediate remediation. Still, management is developing a long-term plan to

decontaminate collections objects and demolish storage facilities with asbestos insulation and failing containments. This plan, submitted as part of the Institution's FY 2013 Office of Management and Budget federal budget request, includes a design of a temporary storage facility to house decontaminated objects. Smithsonian management will redirect FY 2012 resources to design the temporary facility and decontamination project. However, a construction plan will take additional time and is subject to the availability of funds. The Directors of OFEO and NMAH in coordination with the OUSHAC have proposed to initiate corrective action by September 30, 2012.

Recommendation 5. Concur with clarification. NMAH management has developed a strategic and integrated collections care methodology which it believes incorporates the components of a preservation program in accordance with SD 600 ***Implementation Manual***. In addition, NMAH addresses conservation treatment of objects through a prioritized plan based on exhibition, loan and research needs. NMAH management will formally document its collection care methodology and establish priorities for its implementation. The Director, NMAH in coordination with the OUSHAC, has proposed to complete corrective action by September 30, 2012.

Recommendations 6 and 7. Concur. OFEO has identified a capital project to bring NMAH collection storage areas into compliance with OPS ***Collection Space Security Standards*** and will seek funding from the Capital Planning Board for fiscal year 2014. In addition, in fiscal years 2012 and 2013, OFEO will develop a prioritized plan that will include several smaller, higher priority projects, such as the installation of card readers in sensitive collections storage areas. The Director, OFEO in coordination with the OUSFA, has proposed to initiate corrective action by September 30, 2012.

Recommendations 8, 9, and 10. Concur. OPS has begun to update the Key Authorization Lists and inventory NMAH collection storage room keys. OPS revised the Smithsonian ***Access Control Handbook*** to identify the requirement for regular reviews of electronic access. They are currently reviewing electronic access with NMAH Division staff. OPS will conduct bi-annual reviews to ensure that access to storage rooms is appropriate. The Director, OPS has proposed to initiate corrective action by December 30, 2011.

Recommendation 11. Concur. NMAH will create a study group to develop and recommend a consistent policy on access to collections storage areas. The Director, NMAH has proposed to complete corrective action by December 31, 2012.

In the interim and effective October 1, 2011, NMAH access policy will reflect that only museum staff will have key and card reader access to the Numismatics collection.

Recommendation 12. Concur. NMAH has eliminated the ability of CMS staff to both delete and remove records in the CIS while having key or card reader access to collections. NMAH also states that contractors never have the authority to delete CIS records. The Director, NMAH, believes that corrective action has been completed as of the date of this report.

OFFICE OF THE INSPECTOR GENERAL COMMENTS

NMAH has not received the appropriate level of attention and funding needed to maintain minimum levels of care and security over America's treasures. As the Smithsonian continues to renovate and expand existing exhibit and public spaces throughout its museums, we encourage the Smithsonian to sustain its commitment to improving conditions and upgrading security at NMAH collections storage areas. We are heartened that the Smithsonian has begun to take an aggressive approach to improving collections stewardship at NMAH.

Below, we address Smithsonian management's and NMAH's general comments on the report, as well as clarify the intent of several of our recommendations.

Although we recognize the museum's efforts to improve collections care with limited resources, we do not endorse NMAH's current reliance on temporary and competitive awards as the sole means to address long-term collections needs. In their general comments, Smithsonian management elaborated on the projects they have been able to undertake only with the assistance of the CCPF. However, we believe that Smithsonian management over-emphasizes the impact of these projects on the 1.8 million objects in the NMAH collection. As mentioned in the report, this approach will not sustain a comprehensive preservation program. We believe that Smithsonian management needs to aggressively pursue increases to NMAH's base funding to achieve its strategic goal of strengthening collections stewardship.

Smithsonian management stated that the report did not acknowledge incremental improvements to NMAH storage areas and minimizes the achievements of NMAH's collections care methodology. We did describe collections care projects that have improved preservation conditions for some collections (see page 15), and in Appendix D added photographs showing the positive effects of such efforts. Therefore, we do not believe that we have minimized the efforts of NMAH staff.

The Smithsonian believes that the report does not sufficiently acknowledge the condition of the objects when they were transferred from the U. S. National Museum or the challenges NMAH has faced managing the collections, as well as its day-to-day operations. We understand that the Museum inherited many challenges that come with caring for an old collection. However, had the museum maintained a comprehensive preservation program, we believe that the current conditions would not be as severe.

In addition, the Smithsonian claims that the report did not adequately address that, when purchased, storage equipment and materials were considered to be standard. We acknowledge in the report that standards have changed; however, the museum should have adopted and implemented revised standards reflecting advancements in the preservation profession.

Smithsonian management expressed concurrence with recommendation 4, but disagrees that the contaminated buildings constitute an immediate health and safety hazard. Based upon structural assessments conducted at Garber since the collapse of a storage building in 2010 and possible damage caused by a recent earthquake, we remain concerned about the potential health and safety impacts should these contaminated facilities collapse. Management's response suggests it is willing to accept the potential risk to both staff and the surrounding community.

The museum expressed concurrence with recommendation 11 and proposed both interim and permanent access policies. As NMAH works to develop a permanent policy for access to its collections storage areas, we encourage NMAH management to clearly differentiate between employees and affiliated staff (such as volunteers, interns, and researchers) and restrict access to its more sensitive collections.

Although NMAH concurred with recommendation 12, it responded that contractors never have the ability to delete records. Evidence we obtained during the audit shows otherwise. CDS staff provided us with two user access level reports that listed multiple contractors with the authority to delete CIS records. We shared a list of these contractors with CDS and CMS management. Based on NMAH's response, we do not consider this recommendation to be resolved. Therefore, we will expect NMAH to develop and implement a policy restricting staff and contractors from having access to both collections and the corresponding records.

Finally, as stated in this report, we believe that the recommendations from both NMAH audit reports are interconnected and equally important for strengthening collection stewardship. While we issued two separate reports to expedite management action, we expect the Smithsonian, NMAH, and OPS to implement corrective action of the recommendations with integrated and comprehensive plans for improving the inventory, preservation, and security controls over the NMAH collection.

We appreciate the courtesy and cooperation of NMAH and OPS staff during the course of this audit.

APPENDIX A. SCOPE AND METHODOLOGY

This audit included three objectives. An earlier report (A-10-03-1) addressed the inventory controls objective, which was to determine whether NMAH's inventory controls were in place and adequate to ensure the collections are properly accounted for. This report addresses the first and third objectives regarding physical security and preservation, which were to determine whether physical security controls were adequate to safeguard the collections, and to assess the preservation of the collections.

We reviewed previous audit reports of security and stewardship of the Smithsonian's collections. We also reviewed Smithsonian directives and guidance related to collections management; OPS handbooks and guidance related to security of collections; and OFEO studies on the condition of storage facilities. We also reviewed a previous survey that documented and evaluated the preservation needs and conditions of the Museum's collections. Further, we examined standards, practices, and studies from other organizations, including museums.

To assess whether physical security controls were adequate and collections were properly preserved in compliance with Smithsonian and museum collections management policies and procedures, we selected two judgmental samples of collections storage areas. Because we selected a judgmental sample, we cannot project the results of either test to the universe of collections storage areas.

Because we excluded the Archives Center collection from our first report, we did not include a review of the Center's preservation practices, and the condition and physical security of its collection storage areas.

Preservation of the Collections and Condition of Storage Facilities

We interviewed personnel in NMAH's Collections Management Services, Preservation Services, Collections Documentation Services, Department of History, Personnel, and Finance units. We also interviewed the National Collections Coordinator, the Office of Planning, Management, and Budget, and staff at the Smithsonian's Museum Conservation Institute. We also met with members of the new CSSC, including staff from NMAH, OFEO, and OPS, to discuss their work as it related to our audit.

We met with OPPM's Project Manager for the NMAH PSRP to discuss the impact of the project on collections storage, as well as future plans to renovate permanent collections storage rooms. We also met with the Office of Facilities Management and Reliability's West Mall Facility Zone Manager to discuss the problems with and plans to replace the HVAC system in the NMAH building.

We evaluated the controls over maintaining proper storage conditions for the NMAH collections to identify procedural strengths and weaknesses. In coordination with CMS management, we developed a preservation assessment tool to evaluate preservation practices and storage conditions at NMAH. We selected a judgmental sample of collections storage areas at NMAH facilities in Washington, DC, and Maryland based on the size of the room, as well as the number and nature of the objects stored within. For each storage area, we analyzed the storage equipment, housing, housing practices, and the facility control. (See Appendix C for descriptions of preservation assessment tool criteria.) We did not assess the conditions at three offsite storage buildings because of asbestos and lead contamination. We conducted this evaluation in coordination with CMS management, NMAH Preservation Services, and the curatorial staff.

Physical Security of Collections Storage Areas

We interviewed OPS management and staff to determine physical security policies and procedures. We met with NMAH OCA staff to discuss their concerns with physical security, communications with OPS, and internal museum policies and procedures regarding access to collections. We also conducted an on-line survey of the curatorial staff.

To assess physical security controls at NMAH, we selected a judgmental sample of collections storage areas at NMAH facilities in Washington, DC, and Maryland based on the size and the sensitivity of the collections stored in the rooms. We also tested all areas included in TSD's bi-annual High-Risk Area Inspection Program. We could not assess the conditions at three offsite storage buildings because of asbestos and lead contamination. We conducted this evaluation in coordination with staff from OPS Operations, System Administration, and Security Engineering Support Divisions. With the assistance of OPS staff, we opened secured doors and activated various types of security devices to determine whether alarms were working properly. We also observed alarm and camera activity from the OPS control rooms and received reports from the security system to verify our results. During the testing, we noted where security was not in compliance with the "Medium Risk" level described in OPS' Security Design Criteria.

We analyzed three months of OPS' Key Register Log records to determine if keys to collections storage areas were being signed out by authorized staff and were being returned in a timely matter.

We obtained and reviewed card reader access control lists for collections storage rooms to determine whether staff or volunteers had inappropriate access to storage areas. We verified whether OPS had appropriately screened volunteers with access to the National Numismatic Collection storage area and verified whether volunteers were tracked by the Smithsonian's Visitor Information and Associates' Reception Center.

We reviewed CIS user access levels and compared them to card reader access reports and OPS Key Authorization Lists to determine whether staff had access to both objects and their corresponding CIS records and accession files.

We conducted this performance audit in Washington, D.C., from September 2009 through June 2011, 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 we obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

APPENDIX B. MANAGEMENT'S RESPONSE

Smithsonian Institution

Office of the Deputy Under Secretary for Collections and Interdisciplinary Support

Date September 23, 2011

To A. Sprightley Ryan, Inspector General

cc David K. Allison, Associate Director, National Museum of American History (NMAH)
Karen Garlick, Assistant Director, Collections Management Services, NMAH
William G. Tompkins, National Collections Coordinator, National Collections Program
Douglas Hall, Associate Director, Physical Security and Risk Management, Office of Protection Services (OPS)
Peter Mroczkiewicz, Deputy Director, Operations, OPS

From Scott Miller, Deputy Under Secretary for Collections and Interdisciplinary Support
Richard Kurin, Under Secretary for History, Art and Culture
Alison McNally, Under Secretary for Finance and Administration
Marc Pachter, Director, National Museum of American History
Bruce Kendall, Director, Office of Facilities Engineering and Operations
William T. Lynch, Director, OPS

Subject Management Response to Inspector General Audit of Collections Stewardship of the National Collections at the National Museum of American History—Preservation and Physical Security, (A-10-03-2)

This response is collectively submitted on behalf of Smithsonian management, including the National Museum of American History (NMAH).

We extend our thanks to the Office of Inspector General (OIG) staff for their audit of collections preservation and security at NMAH, and for their recommendations on ways to improve collections stewardship. We appreciate the cooperation, attention and professionalism of the OIG staff in this series of collections audits.

Collections stewardship is among the Smithsonian's highest priorities, and in some cases the greatest challenge. The volume, characteristics, complexity and age of Smithsonian collections, as well as the variety of discipline-specific standards that apply to their care, make their management as complex as the collections themselves.

The Smithsonian appreciates OIG's assessment in this audit that physical security is generally adequate. We concur that modern standards drive our critical decisions and we will continue to make security improvements as warranted.

The Smithsonian management acknowledges that declining resources and staff erosion have impaired our ability to sustainably support collections management activities. While this is true at NMAH and throughout the Smithsonian, the Institution has made significant strides in improving the management, care and accessibility of collections with targeted collections care funding. The Smithsonian has been successful by taking pragmatic and strategic approaches that address collections needs with integrated and cost-effective strategies, which OIG has endorsed. Through collections assessments, and

both long- and short-term planning and prioritization, the Smithsonian has targeted those collections with the greatest relevance in supporting the Institution's mission and strategic plan; the most urgent collections preservations needs; and the highest current or potential use for research, education and exhibition.

The Smithsonian recognizes that the recommendations outlined by the OIG are appropriate, but would require an infusion of very significant new resources. Given what available resources the Institution does have, the Smithsonian will strive for effective short-term solutions to the issues profiled at NMAH and to other prioritized issues throughout the Institution. And through continuing federal budget requests and private donations, the Smithsonian will strive for enhanced long-term solutions to collections issues comprehensively. Both approaches illustrate the stark reality of responsiveness guided by the availability of resources.

Despite present and continuing resource constraints, this audit on stewardship of collections at NMAH comes at an opportune time as management engages in a search for a new NMAH Director. Collections issues have not been adequately prioritized by the museum in the past; the incoming NMAH Director will have central, solid support on efforts that rectify problems identified within the audit and enhance collections stewardship and accessibility at NMAH overall.

Response to Findings

The Smithsonian does not refute the general findings of this audit that storage and housing conditions in many of the museum's collections storage locations must be improved. The Smithsonian acknowledges that improvement requires the implementation of responsive, prioritized and funded plans. The Smithsonian also recognizes the need for targeted funding to address these concerns.

This and the other recent OIG audits on collections detail some of the real and sometimes challenging aspects of caring for collections as large and diverse as 1.8 million objects and 16,000 cubic feet of archival material at NMAH and 137 million objects and specimens, 1.9 million library volumes, and more than 100,000 cubic feet of archival material Smithsonian-wide.

The audit findings do however have some shortcomings:

Inherited or Pre-Existing Conditions May Be Underestimated. The OIG audit series on collections, including this one at NMAH, does not sufficiently acknowledge existing conditions or the broader context necessary for understanding why the conditions may exist. NMAH, in this example, opened in 1964, with a hundred-year history of broad and deep preservation issues within the newly transferred collections. Tackling that backlog while acquiring new collections and running a robust museum requires funds and personnel well beyond those allowed by appropriation.

The Improvement of Standards May Not Be Appropriately Attributed. Similarly, the OIG reports may not sufficiently explain that today's preservation standards, preservation housing and storage options, inventory controls, security and methods for evaluating the suitability and fitness of systems for specific collections differ markedly from the past, when choices were more limited and may be inappropriate from today's perspective. In

many cases, Smithsonian staff have established and improved the industry standards and best practices for storage, housing and security—but retrofitting those standards to past collections and practices is challenging.

Smithsonian and NMAH's Incremental Improvements Largely Unacknowledged. The report minimizes achievements NMAH has made over the last six years through the development of a collections care methodology. This process includes a component for planning upgrades to storage, housing, space usage, and accessibility. For example, using this methodology in 2009-2010, the museum prioritized and funded a project in the agriculture and natural resources collections. The project established inventory control over 27,118 objects, recorded accountability data in the collections information system (CIS), and created and linked 47,186 digital images to the CIS. The museum also began collections maintenance work, and created a storage and housing plan to address preservation deficiencies. Targeted incremental improvements at the museum have been significant.

Facility upgrades have also gained preservation improvements for the museum. Most notably, the move to Pennsy Drive provided NMAH with 106,800 square feet of space to consolidate collections from two remote locations. In the process, housing was upgraded for 30 percent of the objects through re-crating, and modern storage systems were provided. Similarly, at the Garber Facility when a 2010 OFEO snow emergency structural assessment revealed serious deficiencies in the structural integrity of all seven of NMAH's Garber buildings, interim measures were taken immediately to reinforce the building of greatest concern, and a project to install a system of structural towers in the building will begin in October 2011. The assessment also helped drive the Institution's prioritization of these buildings for capital planning board consideration.

Significant Strides in Collections Space Planning May Appear Minimized.Most promising for long-range collections preservation is the formation of the Smithsonian Collections Space Steering Committee (CSSC), a pan-Institutional body chartered to develop a plan with near-term, intermediate, and long-term recommendations for addressing current and projected Institutional collections space needs. The report mentions this group, but may not have expressed the significant impact or correlated the work to the audit recommendations.

Separate Preservation and Inventory Components May Segment These Initiatives. Separating the inventory and preservation components of the stewardship audit into two discrete reports with no cross-references (and security concerns outlined separately in each) may create an impression that it is feasible and desirable for remediation in both areas to proceed simultaneously, but in isolation from each other. Collections care is not a single process, but a series of components that are interwoven, interdependent and ongoing. The interdependencies of the preservation and inventory components, as well as security, are not reflected as integrated recommendations, but this interconnectivity, and indeed the interconnectivity of all Smithsonian museums and collections, is the context by which any OIG recommendation is executed.

Response to Recommendations

To better ensure long-term preservation of the Smithsonian collections, OIG recommends that the Deputy Under Secretary for Collections and Interdisciplinary Support (DUSCIS), in coordination with the Director, OFEO:

1. Develop a prioritized plan for addressing collections storage needs Institution-wide that identifies possibilities for acquiring storage space.

Response: Concur

The National Collections Program and the Office of Planning and Project Management/OFEO are leading an Institution-wide initiative to develop a Smithsonian collections space plan with near-term, intermediate, and long-term recommendations for addressing current and projected Smithsonian-wide collections storage requirements.

The collaborative Collections Space Steering Committee recently completed a survey of over 2.1 million square feet of collections space. Data were collected from over 30 properties, representing 1,800 spaces or 17.5 percent of the Smithsonian's total square footage. This baseline data provide a snapshot of current collections space conditions and characterizes the quality of collections space, storage equipment, accessibility, environmental conditions, security, and fire safety.

The Committee's work will progress through FY12 but has already informed the Smithsonian's FY13 federal budget request to OMB. The Smithsonian will take incremental steps towards implementation of the comprehensive collections space plan as resources permit.

Anticipated completion date: September 30, 2012

To improve conditions in collections storage areas to ensure long-term preservation of the NMAH collections, OIG recommends that the Under Secretary for History, Art and Culture, (OUSHAC) in coordination with the Director NMAH:

2. Explore opportunities to increase available space, including ways to maximize existing storage space.

Response: Concur

Recognizing that creation of new space is a resource issue, the Smithsonian is actively exploring ways to maximize existing space and examining all possible options to acquire new space. The Smithsonian, and NMAH in particular, will explore ways to further employ the collections space survey data collected by the Collections Space Steering Committee described in recommendation #1. Further, an experienced architecture and engineering firm was contracted to support the steering committee's planning efforts; the Smithsonian will explore opportunities to effectively leverage this resource.

Additionally, NMAH will work with OFEO to re-examine phase four of the NMAH Public Space Renewal Project for opportunities to include additional off-site object storage space.

In context of collections care projects, NMAH routinely looks at the potential for compact shelving and was able to successfully use compact shelving in the rehousing of its military uniform collections described earlier in this response. NMAH will continue to explore all possible options for maximum beneficial use of space, including those that require an infusion of resources.

Anticipated completion date: September 30, 2012

3. Develop, fund and implement a prioritized plan to replace substandard storage equipment and housing with appropriate materials.

Response: Concur with clarification

The issue of implementation is largely resource dependent and beyond the Smithsonian's complete control—dedicated funding is required to implement larger scale issues with substandard storage equipment and housing. Replacement of obsolete collections cabinetry also requires available swing space, which NMAH currently lacks. However, NMAH can take steps to prioritize storage equipment needs using the collections space survey data. The museum will continue to employ its collections care methodology to prioritize these goals. The NMAH inventory component must be completed first for assessment and comparison of issues; phase two of the methodology examines preservation planning targeting replacement considerations.

Anticipated completion date to establish and outline priorities: September 30, 2012
Funding and implementation cannot be estimated with currently available resources.

To improve access to collections stored in contaminated storage areas and address the safety risks associated with the contaminated buildings, OIG recommends that the Directors of OFEO and NMAH in coordination with the OUSHAC:

4. Develop and implement a plan to decontaminate objects and storage facilities containing hazardous materials.

Response: Concur with clarification

Neither the OIG nor studies and assessments by OFEO have concluded that the storage facilities constitute a public or employee safety hazard requiring immediate remediation. OFEO and NMAH, in coordination with the OUSHAC and the Collections Space Steering Committee, are actively engaged in developing a long-term plan to decontaminate collection objects and to demolish storage facilities with asbestos insulation and failing containments. This plan, submitted as part of the Institution's FY13 OMB federal budget request, will

involve design of a temporary (swing space) storage facility. The Smithsonian management believes that it can demonstrate progress in the implementation of this effort by redirecting resources for designing the building and the decontamination project in FY12. Funding the construction plan will take additional time and will be dependent upon the availability of appropriated funds.

Anticipated completion date of plan and initial implementation: September 30, 2012

To comply with the Smithsonian's collections management policy and to help ensure adequate preservation of NMAH collections, OIG recommends that the Director, NMAH, in coordination with the OUSHAC:

5. Establish and implement a Preservation Program, as required by SD600, to include prioritized plans for conducting staffing and preservation assessments, as well as preservation and curatorial staff training.

Response: Concur with clarification

NMAH developed a strategic and integrated collections care methodology to address the needs of collections within the constraints of available resources and facilities. The methodology incorporates the components of a preservation program, as outlined in the SD 600 *Implementation Manual*. Developed over time, the approach has been refined to achieve higher productivity, economies of scale, and sustained collections accountability and preservation results – thereby, addressing components of both audits. In addition, NMAH addresses conservation treatment of objects through a prioritized plan based on exhibition, loan, and research needs.

While recent accomplishments in preservation are encouraging, it is evident that considerable preservation work lies ahead. NMAH now has a fully matured methodology with a proven record of accountability and preservation achievements. NMAH will continue to apply its collections care methodology based on collections assessments, which balances inventory and preservation needs and addresses them in a prioritized manner to accrue benefits for the widest segment of the collections possible. To address the spirit of this recommendation, NMAH will formally document its collections care methodology, establishing priorities and strategies for its implementation.

Anticipated completion: September 30, 2012

To strengthen physical controls over access to the NMAH collections storage areas and to bring collections storage areas up to OPS standards, OIG recommends that the Director of OFEO in coordination with the Under Secretary for Finance and Administration (OUSFA):

6. Develop and implement a prioritized plan, in line with the findings of the CSSC survey, to bring NMAH collections storage areas into compliance with OPS' *Collections Space Security Standards* and the *Security Design Criteria*.

Response: Concur

As OIG has accurately indicated, OFEO is aware that the NMAH's collections spaces do not comply with current *Collection Space Security Standards* and have identified a capital project in FY14 to correct these deficiencies. However, this project is now identified to be $1.5 M rather than the $1M identified in the audit report.

Additionally, OUSFA and OFEO will develop a prioritized plan that will include several smaller, higher priority projects in FY12 and FY13 (to include the card readers identified in Recommendation #7) and will request capital funding to support these efforts. The Smithsonian management believes that it can demonstrate progress in FY12 in the implementation of this plan pending approval of the Smithsonian Capital Planning Board.

Anticipated completion of prioritized plan and initial implementation: September 30, 2012

To strengthen controls over access to collections storage areas, the OIG recommends that the Director of OFEO, in conjunction with the OUSFA:

7. Install card readers on all NMAH collections storage areas, working in a prioritized manner, if necessary, starting with the more sensitive collection storage areas.

Response: Concur

The OUSFA and OFEO agree that card readers will improve the security of the NMAH collections spaces and will include them in the plan identified in Recommendation #6.

Anticipated completion of prioritized plan and initial implementation: September 30, 2012

In the interim, OIG recommends that the Director, OPS in coordination with the Director, NMAH, where applicable:

8. Request updated Key Authorization Lists from NMAH Division Chairs, develop a comprehensive report of authorized staff, and ensure compliance with OPS policies regarding keys.

Response: Concur

OPS has already begun updating the Key Authorization Lists and has implemented internal performance metrics to ensure that these lists are reviewed every six months as outlined by OPS policy.

Anticipated date to complete initial update: December 30, 2011

9. Conduct regular inventories of NMAH collection storage keys, as required by OPS policy.

Response: Concur

OPS has already begun inventories of NMAH keys and implemented internal performance metrics to ensure that they are reviewed every six months as outlined in OPS policy.

Anticipated date to complete initial inventory update: December 30, 2011

10. Develop and implement OPS policies and procedures requiring Technical Security Division and Security Managers to work with the NMAH Division Chairs to review card reader access lists on a regular basis to ensure that access to collection storage areas is appropriate.

Response: Concur

OPS has already updated the Smithsonian *Access Control Handbook* to identify the requirement for regular reviews of electronic access as well as begun reviews of electronic access with the NMAH Division Chairs and staff. OPS has also implemented internal performance metrics to ensure that the records are reviewed every six months as indicated in OPS policy.

Anticipated date to complete initial update: December 30, 2011

To strengthen oversight of access to collections storage areas, OIG recommends that the Director, NMAH:

11. Develop a written policy permitting responsible access to collections documentation and collections storage areas, including improved controls over

key and card reader access, as required by SD600 Implementation Manual and the Collections Space Security Standards

Response: Concur

As described below, some work has already been accomplished and other work is pending.

Regarding collections documentation in NMAH's collections information system (CIS):

NMAH has an access policy documented in the system security plan and implemented through administration of the CIS. Since 1996, all users have been assigned "roles" that restrict their permissions to add, create, or modify data and a "view" that restricts the visibility of data. Users have signed an agreement with terms and conditions of use. User accounts are reviewed monthly to determine if any account should be disabled or deleted due to inactivity. Also since 2008, user accounts have been reviewed monthly to ensure that only necessary accounts exist.

Completed as per dates above.

Regarding collections documentation in paper records:

The policy for access to the Museum's accession files will be reviewed in the context of the consolidation and relocation of registration and collections documentation functions (including the accession files) to the south wing of the building in spring-summer 2012.

Anticipated completion date: September 30, 2012

Access to collections documentation in divisional files is being addressed on an ongoing basis in the context of collections care projects that are incorporating this information into the CIS, as relevant.

Anticipated completion: Ongoing

Regarding access to collections storage areas:

NMAH will create a study group to develop and recommend consistent policy on access to collections storage areas. The resulting policy will be disseminated to NMAH staff, implemented, and monitored. In the interim and effective October 1, 2011, the NMAH access policy will reflect that only museum staff have key and card reader access to the numismatics collection.

Estimated completion date: December 31, 2012

To prevent staff and contractors from having unrestricted access to both objects and object records, OIG recommends that the Director, NMAH:

12. Ensure that CMS staff and contractors with the ability to delete or remove records do not have key and card reader access to the collections.

Response: Concur

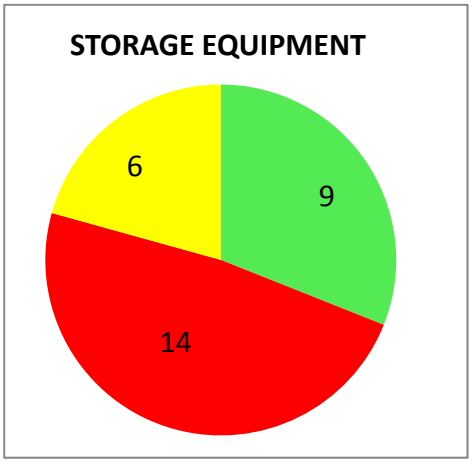
There are no longer any CMS staff with ability to delete or remove records who also have key or card access to the collections. Contractors never have the authority to delete CIS records.

Completed as of date of this response.

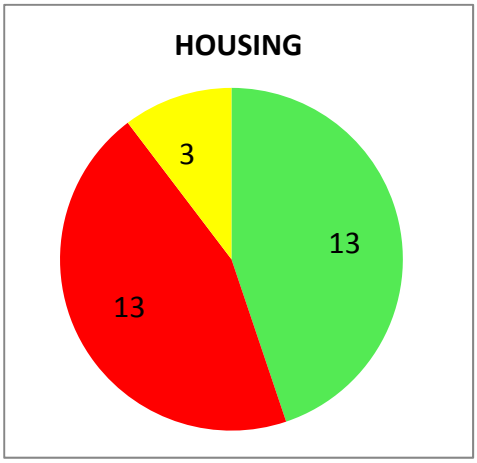
APPENDIX C. TESTING DETAILS

1. Preservation Testing Results Summary

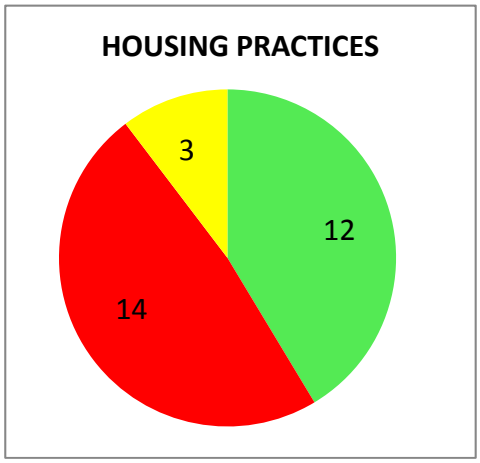
The following charts represent the numbers of storage areas that we assessed as standard (green), sub-standard (red), or a combination of both (yellow).



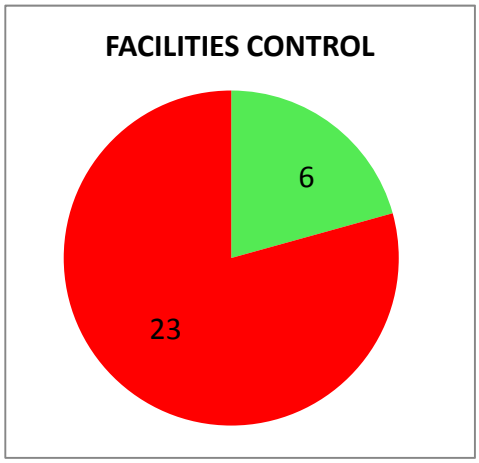
Storage Equipment - the cabinet, racking, shelving, etc. that holds the objects. A standard rating meant that the equipment was structurally sound, made of stable materials (e.g. metal), had no harmful components or hazardous materials, and was appropriate for storing the objects.



Housing - the materials that are used to hold and support the objects within the equipment, such as folders, boxes, tissue paper, and foam. A standard rating meant that the housing materials were structurally sound, acid-free, and appropriate for the objects.



Housing Practices - how the objects are housed within the storage equipment. A standard rating meant that the equipment was not overcrowded and that housing materials such as boxes and folders were not over- or under- filled.



Facilities Control - the physical conditions of the room or building, as well as the systems needed to support the facility, such as HVAC. A standard rating meant that there were no structural problems, no active leaks or history of leaks, stable environmental conditions, appropriate lighting, and no hazardous materials.

2. Summary of Installed Security Devices

SECURITY DEVICE	1	2	3	4	5	6	7	8	9
Card Readers	Yx3	Y	N	N	N	N	N	N	N
Magnetic Switches on Doors	Yx5	Yx3	Yx2	Y	Yx2	Yx2	Yx2	Yx2	Yx2
Lockable Door (secure hinges)	Yx5	Yx3	Yx2	Y	Yx2	Yx2	Yx2	Yx2	Yx2
CCTV (color, 24/7 recording)	Yx3	Y	N	N	N	N	N	N	N
Vibration Sensors	Y	Y	N	N	N	N	N	N	N
Motion Sensors	Y	Y	Y	N	N	Y	N	Y	N
Arm/Disarm Panel	N	Y	N	N	N	N	N	N	N

SECURITY DEVICE	10	11	12	13	14	15	16	17	18
Card Readers	N	N	N	N	N	N	N	Y	Y
Magnetic Switches on Doors	Yx2	Y	Yx2	Yx2	Y	Yx2	Yx2	Y	Yx2
Lockable Door (secure hinges)	Yx2	Y	Yx2	Yx2	Y	Yx2	Yx2	Y	Yx2
CCTV (color, 24/7 recording)	N	N	N	N	N	N	N	Y	Y
Vibration Sensors	N	Y	N	N	N	N	N	Y	Y
Motion Sensors	N	N	N	N	N	N	N	Y	Y
Arm/Disarm Panel	N	N	N	N	N	N	N	Y	Y

SECURITY DEVICE	19	20	21	22	23	24	25
Card Readers	Y	Y	Y	Y	Yx2	Yx2	Yx3
Magnetic Switches on Doors	Yx2	Yx8	Yx7	Yx8	Yx4	Yx4	Yx10
Lockable Door (secure hinges)	Yx3	Yx8	Yx7	Yx8	Yx4	Yx4	Yx10
CCTV (color, 24/7 recording)	N	N	N	Y	N	Y	Yx3
Vibration Sensors	Y	N	N	N	N	N	Y
Motion Sensors	Y	Y	Y	Y	Y	Y	Y
Arm/Disarm Panel	Y	Y	Y	Y	Yx2	N	Yx3

CHART KEY

Columns 1 through 25 represent storage rooms tested.

Y – Device Installed
N – Device Not Installed
x# - Number of Devices Installed

APPENDIX D. NMAH IMPROVEMENTS TO STORAGE CONDITIONS

BEFORE IMPROVEMENTS

Equipment, housing, and housing practices in a Military History storage room were representative of substandard conditions throughout the museum's collection storage areas. Cabinets were old, made of untreated wood, and overcrowded. Objects were stored on the floor and on top of cabinets. Several cabinets in the room were inaccessible to staff because they were blocked by other cabinets and large objects.

AFTER IMPROVEMENTS

Between 2005 and 2011, the division received CCPF awards, which it used to significantly improve the storage conditions in the room. The funding allowed the division to purchase new compact storage cabinets and re-house over 6,000 military uniforms. The division was also able to properly inventory and document these objects. The Military History division hopes to continue these improvements in other storage rooms as long as funding is made available to them.

BEFORE IMPROVEMENTS

This Work & Industry Division collection storage room contained a significant portion of the agriculture and natural resources collections. In this room, a collection of mining lamps was stored on substandard equipment, without any housing to properly preserve the objects. There was limited access to the objects and the collection was at risk for potential damage due to these inadequate conditions.

AFTER IMPROVEMENTS

The division received CCPF awards in 2009 and 2010 to improve the storage conditions in this room. The awards enabled the division to purchase new storage cabinets and re-house nearly 30,000 objects in this room. For example, the mining lamp collection is now stored in new cabinets and housed in individual boxes to improve access and reduce the risk of damage to the objects.

APPENDIX E. CONTRIBUTORS TO THE REPORT

The following individuals from the Smithsonian Office of the Inspector General contributed to this report:

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