OIG

Office of Inspector General

U.S. Department of State • Broadcasting Board of Governors

AUD-MERO-18-17 | Office of Audits | January 2018

Audit of Bureau of Overseas Buildings Operations' Oversight of New Construction Projects at the U.S. Embassy in Kabul, Afghanistan

MIDDLE EAST REGION OPERATIONS

January 2018
OFFICE OF AUDITS
Middle East Region Operations

OIG HIGHLIGHTS

AUD-MERO-18-17

Audit of Bureau of Overseas Buildings Operations' Oversight of New Construction Projects at the U.S. Embassy in Kabul, Afghanistan

What OIG Audited

In September 2011, the Bureaus of Overseas Buildings Operations (OBO) and Administration contracted with Caddell Construction, Inc. (Caddell), to build the New Office Annex (NOX) and Staff Diplomatic Apartment-1 (SDA-1) at the U.S. Embassy in Kabul, Afghanistan. OBO is responsible for overseeing the commissioning process, verifying that buildings are substantially complete, and ensuring that the turnover of the buildings to the post Facility Manager and transition to occupancy are efficient. The commissioning process focuses on verifying and documenting that building systems operate within the functional performance guidelines, as required by the contract. Buildings are deemed substantially complete when only minor items remain to be completed and it has been determined that those minor items will not interfere with occupancy. Following substantial completion, the buildings are occupied and turned over to the post Facility Manager, who assumes responsibility for operations and maintenance (O&M) of the facility.

OIG conducted this audit to determine whether OBO followed Department of State (Department) policies, procedures, and directives governing the commissioning, substantial completion, and turnover of the NOX and SDA-1 at the U.S. Embassy in Kabul.

What OIG Recommends

OIG made 10 recommendations to OBO to address identified deficiencies in its oversight of the commissioning, substantial completion, and turnover of the NOX and SDA-1. On the basis of OBO's response to a draft of this report (see Appendix D) OIG considers three recommendations resolved pending further action and seven recommendations unresolved. A synopsis of OBO's comments and OIG's reply follow each recommendation in the Audit Results section of this report. OIG's reply to OBO's general and technical comments are presented in Appendix E.

What OIG Found

OIG found that OBO's oversight of commissioning, substantial completion, and turnover of the NOX and SDA-1 was inconsistent with Department policies, procedures, and directives. The OBO Project Director in Kabul declared both buildings substantially complete and proceeded with occupancy before a number of key project milestones had been met. For example, even though OBO policies state that commissioning of all major building systems must be done before a project is declared substantially complete, OIG identified 25 systems that were not fully commissioned in one or both buildings prior to the declaration of substantial completion. The failure to complete the commissioning process occurred because of a combination of factors, including fundamental disagreements between the OBO Project Director in Kabul and the Commissioning Agent regarding the readiness of the systems in question, ambiguous OBO guidance as to which systems must be commissioned prior to substantial completion, and the fact that the Commissioning Agent is subordinate to the Project Director and, thus, the Project Director has ultimate authority over the commissioning process. These factors enabled the OBO Project Director to exercise his discretion to declare the buildings substantially complete notwithstanding the opinion of the Commissioning Agent. The decision to accept the buildings without completing the commissioning process, in turn, contributed to a range of building deficiencies after occupancy described in previously issued OIG reports.

In addition, OBO did not ensure that Caddell or the Commissioning Agent prepared and submitted key project documents before substantial completion and occupancy. For example, OBO did not require Caddell to prepare and submit Owner's Project Requirements or Basis of Design documents, both of which are needed to determine whether the contractor fulfilled project requirements. Furthermore, OBO did not follow established procedures or best practices in planning for the buildings' turnover from OBO's Office of Construction Management to the post Facility Manager. For example, according to OBO procedures and directives, O&M deliverables, such as system manuals and as-built drawings are to be provided to the post Facility Manager at or before substantial completion. However, because OBO did not include phasing requirements in the contract modification for the NOX and SDA-1, a number of key O&M deliverables were not, in fact, required to be provided when the OBO Project Director declared each building substantially complete. As a result, Facility Management personnel were not fully prepared to accept responsibility for O&M of the NOX and SDA-1 following substantial completion and occupancy.

CONTENTS

OBJECTIVE

The Office of Inspector General (OIG) conducted this audit to determine whether the Bureau of Overseas Buildings Operations (OBO) followed Department of State (Department) policies, procedures, and directives governing the commissioning, substantial completion, and turnover of the New Office Annex (NOX) and Staff Diplomatic Apartment-1 (SDA-1) at the U.S. Embassy in Kabul, Afghanistan. See Appendix A for the purpose, scope, and methodology of this audit.

BACKGROUND

During the last 8 years, OBO and the Bureau of Administration have undertaken a major office and residential expansion at the U.S. Embassy in Kabul, Afghanistan. As part of this expansion, in September 2011, the bureaus contracted with Caddell Construction, Inc. (Caddell), to build the NOX and SDA-1 at Embassy Kabul. The NOX was designed to accommodate 917 desks, and SDA-1 was designed to accommodate 298 beds. At the time of award, Caddell already had a contract in place with the Department to build other facilities at Embassy Kabul. OBO and the Bureau of Administration modified Caddell's contract and added $222.5 million for the construction of the NOX, SDA-1, and other structures.[1] The estimated completion date for all the Kabul construction projects contracted with Caddell is March 2019. OBO declared the NOX substantially complete in June 2015, and SDA-1 was declared substantially complete in January 2016.[2] Embassy personnel began occupying the NOX in July 2015, and residents began moving into the SDA-1 apartments in February 2016.

As part of the planned audit work, OIG executed an interagency agreement with the U.S. Army Corps of Engineers (USACE) to provide licensed, professional electricians and mechanical engineers to assist OIG auditors in evaluating whether the NOX and SDA-1 building facilities, components, and systems were constructed and commissioned in accordance with contract specifications and international building code standards. The USACE team included mechanical engineers from USACE's Transatlantic Afghanistan District as well as USACE's Engineering and Construction Division. The USACE team also included master electricians from Task Force Protect Our Warfighters and Electrical Resources (POWER).

In the course of conducting the audit, OIG found deficiencies affecting a range of building systems in the NOX and SDA-1. Because OIG believed that these problems required prompt corrective action, OIG reported these deficiencies via a Management Alert and two Management

[1] According to Caddell, although the modification included funds to build a number of other facilities and structures (including a warehouse expansion, perimeter walls, water tanks, and a utility building), the costs associated with the NOX and SDA-1 accounted for the majority of the $222.5 million contract modification. In total, the value of Caddell's construction contracts at Embassy Kabul is approximately $800 million. Caddell's work on the embassy includes a classified office annex, two additional residential buildings, recreation and dining facilities, parking and vehicle maintenance facilities, a power plant, additions to the existing Marine security guard residence, new perimeter walls, guard towers, and compound access control facilities.

[2] Declaring a building "substantially complete" means that the construction is sufficiently complete so the building may be used for the purpose intended and that only minor items remain to be finished.

Assistance Reports. Specifically, in an April 2016 Management Alert, OIG identified and reported risks to occupants' life, health, and safety due to hazardous electrical current in the two buildings.[3] In a March 2017 Management Assistance Report, OIG reported that two security doors in SDA-1 were improperly altered.[4] Furthermore, in a June 2017 Management Assistance Report, OIG identified and reported numerous ongoing deficiencies affecting a range of building equipment and systems throughout the NOX and SDA-1.[5]

Responsibilities and Procedures in Preparing Newly Constructed Embassy Buildings for Occupancy

Through its Capital Security Construction Program, the Department constructs diplomatic facilities that are intended to be safe, secure, and functional. As the overseas real property manager for the Department, OBO has the lead role in acquiring, designing, building, and maintaining the Department's facilities overseas. For most design and construction work, OBO contracts with private-sector firms, but OBO provides detailed requirements and guidance to ensure that the facilities meet Department needs and specific building codes and standards. During the construction phase, OBO's Construction, Facility, and Security Management Directorate's Office of Construction Management (OBO/CFSM/CM) provides management oversight and construction supervision and, through its onsite Project Director, assumes primary responsibility for the execution of the construction contract.

The commissioning of building systems, declaration of substantial completion, and turnover of buildings to the post Facility Manager are three separate but closely related steps. They generally follow one another near the end of the construction project but before building occupancy. Several project stakeholders have specific roles and responsibilities related to each of these steps in the construction process. Their relationships and responsibilities are summarized below.

- **OBO's Construction, Facility, and Security Management Directorate, Office of Construction Management** (OBO/CFSM/CM) provides management, oversight, and onsite construction monitoring for OBO's worldwide construction program. Specifically, the OBO Project Director serves as the Contracting Officer's Representative and is responsible for the daily management of the project onsite. The OBO Project Director is also charged with monitoring construction to ensure it meets with the approved and contracted design, scope, standards of quality, and safety requirements. The OBO Project Director also oversees commissioning, verifies that the work is substantially complete, and ensures that the building turnover and transition to occupancy are carried out in accordance with established policies and procedures.

[3] *Management Alert: Hazardous Electrical Current in Office and Residential Buildings Presents Life, Health, and Safety Risks at U.S. Embassy Kabul, Afghanistan* (MA-16-01, April 2016).

[4] *Management Assistance Report: Improvements Needed to the Security Certification Process to Ensure Compliance with Standards at Embassy Kabul, Afghanistan* (AUD-MERO-17-28, March 2017).

[5] *Management Assistance Report: Building Deficiencies Identified at U.S. Embassy Kabul, Afghanistan Need Prompt Attention* (AUD-MERO-17-44, June 2017).

- **Independent Commissioning Agents** are third-party-contractor subject-matter experts hired by OBO. Each of these agents works for OBO/CFSM/CM under an indefinite-delivery, indefinite-quantity contract to perform commissioning services. According to OBO, each commissioning agent's contract with OBO typically covers a range of worldwide building projects. For each commissioning project, a statement of work outlines the commissioning agent's key responsibilities at that location. Commissioning agents observe and oversee commissioned systems' functional performance and document whether they meet the design intent and contract requirements. They also verify that building systems are designed, installed, and tested to operate and perform as intended. The commissioning agent has a direct reporting relationship to the onsite OBO Project Director, who acts on behalf of OBO in managing the commissioning process. OBO personnel, however, directly oversee three key building systems that do not fall under the responsibility of contracted commissioning agents. These include:

    - **OBO's Office of Fire Protection** is responsible for testing and the acceptance of fire protection and safety systems.
    - **OBO's Office of Facility Management's Elevator Management Program** is responsible for certifying elevators. Program representatives are responsible for final acceptance of elevators, which includes validating equipment safety, performance, and compliance with specifications.
    - **OBO's Office of Security Management**, in conjunction with the Bureau of Diplomatic Security (DS), is the certification authority for all security systems. Specifically, DS is responsible for ensuring that all new construction and major renovation design plans for buildings occupied by U.S. Government personnel comply with applicable Department physical security standards.

- **The Construction Contractor**, Caddell, has primary responsibility for construction following OBO's Standard Embassy Design. OBO's Standard Embassy Design establishes the process that OBO uses for planning, designing, and constructing most of its capital projects, as well as the standards that must be met to ensure new facilities are secure and functional.[6] Caddell also has responsibility for some commissioning activities, including conducting the start-up and functional testing of new systems and equipment.

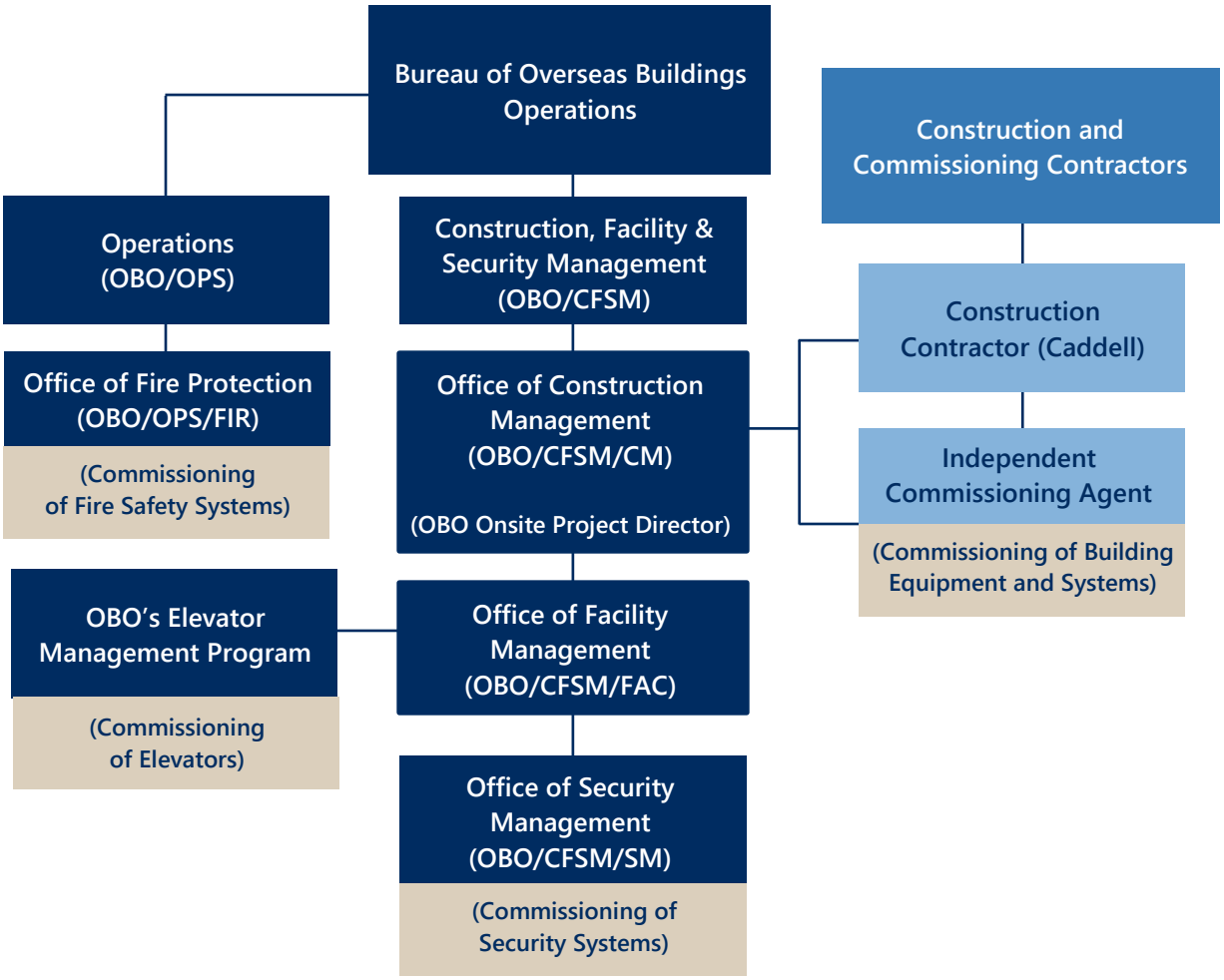
- **OBO's Construction, Facility, and Security Management Directorate, Office of Facility Management** (OBO/CFSM/FAC) oversees the day-to-day operations and maintenance (O&M) needs of posts worldwide. Specifically, embassy facility managers conduct condition and maintenance inspections, develop preventive maintenance programs, and provide hands-on technical support. In addition, embassy facility managers and staff work with the OBO construction team on the transition and turnover of the newly constructed building. Specifically, once the Department issues the certificate of occupancy, the building becomes "occupied," and embassy Facility Management personnel assume responsibility for operating and maintaining the building, with

[6] The contract proposal for the NOX and SDA-1, which is part of a design-build contract.

contractor support. Facility Management personnel are also closely involved in the commissioning process. They attend regularly scheduled commissioning meetings and observe commissioning start-ups and testing to facilitate staff familiarity with the new systems and equipment.

Figure 1 presents the relationships among key stakeholders involved with the commissioning, substantial completion, and turnover of newly constructed embassy buildings.

Figure 1: Relationships among Key Stakeholders Responsible for the Commissioning, Substantial Completion, and Turnover of Newly Constructed Embassy Buildings



Source: OIG generated from information provided by OBO.

Commissioning

Commissioning is defined by the National Conference on Building Commissioning as the systematic process of assuring that all building systems perform interactively, in accordance with the design documentation and intent and with the owner's operational needs.[7] According to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, the commissioning process focuses on verifying and documenting that (1) building systems were designed, built, tested, and adjusted to meet design intent and specified performance requirements; (2) U.S. Government personnel were trained in the operation and maintenance of building systems; and (3) building systems operate within the functional performance guidelines, as required by the contract.[8] For example, a commissioning action may involve starting up and running a building's heating, ventilation, and air conditioning (HVAC) system for a set number of hours or days to ensure the system maintains a set temperature range throughout the building.

OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities states that most commissioning activities[9] should be completed by the substantial completion date of the project.[10] Furthermore, OBO's Guide to Excellence in Diplomatic Facilities, which applied during the time period of this audit,[11] states the following:

> Commissioning of all major systems must be done *before the project is declared substantially complete.* The independent commissioning agent issues a final report that includes commissioning test reports and other documents compiled during the process; these may be issued after substantial completion, but *must be submitted prior to issuance of the Certificate of Occupancy* [emphasis added].[12]

[7] GSA Public Buildings Service, U.S. General Services Administration, "The Building Commissioning Guide," April 2005.

[8] The Bureau of Overseas Buildings Operations Policy and Procedures Directive: Commissioning and Transition to Occupancy of Overseas Facilities, February 20, 2013.

[9] Certain commissioning activities, such as seasonal equipment testing during certain times of the year, will occur after the facility is fully operational and occupied.

[10] The Bureau of Overseas Buildings Operations Policy and Procedures Directive: Commissioning and Transition to Occupancy of Overseas Facilities, February 20, 2013.

[11] OBO stated in its response to a draft of this audit report that the Guide to Excellence in Diplomatic Facilities is no longer in use. However, at the time this audit was conducted, the Guide to Excellence in Diplomatic Facilities was a principal document guiding OBO's work worldwide. OIG also used OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) as well as OBO's Construction and Commissioning Guidelines as the basis for assessing the extent to which OBO followed Department of State (Department) policies, procedures, and directives governing the commissioning, substantial completion, and turnover of the NOX and SDA-1 at the U.S. Embassy in Kabul. Accordingly, these OBO guidelines were used to evaluate OBO's actions in carrying out the commissioning, substantial completion, and turnover of the NOX and SDA-1.

[12] The Bureau of Overseas Buildings Operations Guide to Excellence in Diplomatic Facilities, July 2016.

Substantial Completion

Substantial completion means that the facility is sufficiently complete for it to be used for its intended purpose.[13] It must occur before the facilities can be occupied. At the time a building is declared substantially complete, only minor items remain to be completed and the OBO Project Director and pertinent subject matter experts have determined that those minor items will not interfere with occupancy. Before declaring the building substantially complete, the OBO Project Director typically prepares a schedule of defects (also referred to as a punch list) that documents items not completed in accordance with the contract requirements and that must be corrected before final acceptance of the project. At the time a building is declared substantially complete, the OBO Project Director should provide the contractor with a certificate of substantial completion and the list of minor unfinished items that the contractor must address before final acceptance and payment.

Building Turnover

Pursuant to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, following substantial completion, the Department issues the certificate of occupancy and the building becomes occupied.[14] At this point, the building is turned over to the embassy Facility Manager, who assumes responsibility for the building's O&M.

Before the embassy Facility Manager assumes responsibility for O&M of the building, the Facility Manager and the OBO Project Director must work together to ensure that all the elements required for O&M of the new facility are in place. Specifically, the OBO Project Director must provide a number of key deliverables, such as complete O&M manuals and as-built drawings that the Facility Manager needs to maintain the building. OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities states that these O&M deliverables should be accepted by the Facility Manager concurrent with or before substantial completion.

Once the building becomes occupied, the Facility Manager is also responsible for executing the warranty provisions of the contract. Specifically, the Facility Manager is responsible for monitoring those issues that should be covered under the warranty provisions of the contract and ensuring that relevant O&M problems are addressed by the construction contractor. The warranty provisions included in the contract (Federal Acquisition Regulations [FAR] Clause 52.246-21, *Warranty of Construction*) state that the contractor warrants that work performed under the contract conforms to the contract requirements and is free of any defects in equipment, material, design furnished, or workmanship. According to the FAR, this warranty continues for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, the warranty runs for 1 year

[13] The Bureau of Overseas Buildings Operations Policy and Procedures Directive: Commissioning and Transition to Occupancy of Overseas Facilities, February 20, 2013.

[14] Ibid.

from the date the Government takes possession. However, according to OBO policies and procedures, the 1-year warranty period begins at substantial completion.[15] According to OBO, the NOX warranty period expired on June 22, 2016, and the SDA-1 warranty period expired on January 16, 2017.

Project Documentation

Maintaining project documentation is also an essential part of the commissioning, substantial completion, and turnover process. According to the National Institute for Building Sciences,[16] documentation serves as the historical record of the "what, why, and how" of key team decisions throughout the project planning and delivery process. The National Institute for Building Sciences also states that project documentation supports the establishment of standards of performance for building systems and verifies that designed and constructed work meets those standards. Project documentation also informs O&M efforts after substantial completion and occupancy. Key project documents include the following:

- Owner's project requirements, which outline the owner's goals for the project
- The Basis of Design, which demonstrates how the owner's project requirements will be met by the proposed design[17]
- The commissioning plan, which outlines the scope of commissioning activities[18]
- Commissioning systems manuals, which provide detailed information needed to operate the building
- The final commissioning report, which is a compilation of all information relevant to the outcomes of the commissioning process[19,20]

[15] The Bureau of Overseas Buildings Operations Policy and Procedures Directive: Commissioning and Transition to Occupancy of Overseas Facilities, February 20, 2013, and the Bureau of Overseas Buildings Operations Guide to Excellence in Diplomatic Facilities, July 2016.

[16] Authorized by the U.S. Congress, the National Institute of Building Sciences is a non-profit, non-governmental organization that includes representatives from government, industry, labor, and regulatory agencies to serve the country by supporting advances in building sciences and technology. The National Institute of Building Sciences established the Commissioning Industry Leaders Council in 2013 to advance the performance of buildings through the use of whole building and building system commissioning. Throughout this audit, OIG has periodically relied on standards or guidance developed by the National Institute of Building Sciences because of their comprehensive analysis and authority regarding relevant best practices.

[17] According to contract specification 01811, "Start-up and Commissioning," as part of each formal Design Review submission, the contractor shall prepare Basis of Design documentation for Project Director/Contracting Officer's Representative review and approval. This documentation shall address all building systems that are to be commissioned.

[18] According to contract specification 01811, "Start-up and Commissioning," a project-specific commissioning plan, based on the OBO Generic Commissioning Plan template, is prepared by the Commissioning Agent. The Construction Contractor prepares a commissioning execution plan details the logistics associated with performing and coordinating the commissioning plan requirements.

[19] National Institute of Building Sciences, Whole Building Design Guide, "Commissioning Document Compliance and Acceptance," August 4, 2015.

[20] According to contract specification 01811, "Start-up and Commissioning," the contractor shall review the final commissioning report prepared by the Commissioning Agent and provided at substantial completion.

AUDIT RESULTS

OBO's Oversight of Commissioning, Substantial Completion, and Turnover of the NOX and SDA-1 Was Deficient

OIG found that OBO's oversight of commissioning, substantial completion, and turnover of the NOX and SDA-1 was inconsistent with Department policies, procedures, and directives as well as with best practices. Buildings are deemed substantially complete when only minor items remain to be completed and it has been determined by the relevant Project Director that those items will not interfere with occupancy. However, the OBO Project Director in Kabul declared both buildings substantially complete and proceeded with occupancy before a number of key project milestones had been met. For example, OBO's Guide to Excellence in Diplomatic Facilities, which outlines the general policies that should be applied to all building projects, states that commissioning of all major building systems must be done before a project is declared substantially complete. However, OIG identified 25 systems that were not fully commissioned in one or both buildings before they were declared substantially complete. These systems included the hydronic water systems used to provide heating and air conditioning, elevators, and emergency generators in both buildings; and the chillers and boilers in the NOX. Although the Commissioning Agent in Kabul considered 14 of the 25 systems to be major, the OBO Project Director disagreed and exercised his discretion to declare the buildings substantially complete.

According to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, commissioning is a quality-oriented process that provides verification and documentation that building systems perform according to the design intent and meet contract requirements. Several related factors played a role in the failure to complete the commissioning process. These factors included a fundamental disagreement between the OBO Project Director and the Commissioning Agent regarding the readiness of the systems in question, ambiguous OBO guidance regarding which systems must be commissioned prior to substantial completion, and the fact that the Commissioning Agent is subordinate to the Project Director and, thus, the Project Director has ultimate authority over the commissioning process. Furthermore, there may have been pressure to accelerate the building schedule so that embassy personnel could be moved to more secure structures. In the end, these factors led the Project Director to exercise his authority to declare the buildings substantially complete even though the Commissioning Agent raised concerns regarding outstanding issues affecting a number of building systems. As described in earlier OIG reports, the decision to accept facilities without fully completing the commissioning process contributed to a range of building deficiencies identified after substantial completion and occupancy. Moreover, because OBO policies and procedures identify substantial completion as a contractual milestone that begins the warranty period for all systems and equipment, questions remain regarding the extent to which identified deficiencies may be fully addressed under the terms of the warranty.

Separately, it is unclear to what extent OBO's current policies and procedures regarding the commencement of the warranty period are consistent with the FAR. According to OBO policies and procedures, warranty provisions are to commence at substantial completion, while the FAR states that the warranty period shall either start at final acceptance or at the date that the Government takes possession of the work. This inconsistency presents an ongoing source of potential confusion.

In addition, OBO did not obtain a number of key project documents from Caddell or the Commissioning Agent in advance of substantial completion and occupancy of each building. Key project documents include owner's project requirements, a basis of design document, commissioning systems manuals, a commissioning plan, and a final commissioning report.[21] For example, OBO did not require Caddell to prepare and submit Owner's Project Requirements or Basis of Design documents, both of which are needed to determine whether project requirements were fulfilled by the contractor. Additionally, commissioning systems manuals that would typically be submitted by the construction contractor were not prepared. These manuals include information essential to operating the building, such as as-built drawings, training documents, specifications, and commissioning documentation. In instances when project documents were prepared, separate documents were not developed in support of each facility constructed. This occurred because the NOX and SDA-1 were added to Caddell's existing contract as a modification without separate and distinct completion dates for each facility. According to USACE, this is not a best practice. USACE recommends instead that, in a phased construction project involving multiple buildings or facilities, separate project documents should be developed in support of each building because the features, requirements, and considerations unique to each building should be addressed in each document. Without project documents for each building constructed, OBO cannot determine whether project requirements were followed at each step of the process. Moreover, the lack of documentation creates challenges for maintenance personnel because of the lack of documented standards and benchmarks designed to ensure that the buildings are maintained as originally intended.

OBO also failed to follow established guidance in planning for the buildings' turnover from OBO/CFSM/CM to the Kabul Facility Manager. Although some of the guidance is presented in the form of general policies to be applied to all projects rather than a contract-specific requirement, taken together, they set forth OBO's expectations regarding the building turnover process. For example, OBO's Guide to Excellence in Diplomatic Facilities states that OBO encourages posts to have Facility Management staff observe construction at various stages in order to become familiar with new systems. According to OBO, the Guide to Excellence outlines the general policies that should be applied to all building projects. However, the OBO Project Director in Kabul limited the extent to which Facility Management personnel had access to the NOX and SDA-1 before substantial completion. According to Facility Management personnel, they were only able to access the NOX on a very limited basis when escorted by OBO/CFSM/CM staff, and they were unable to touch, inspect, or familiarize themselves with the building's systems and equipment. Again, this occurred at least in part because of disagreements within OBO regarding the

[21] National Institute of Building Sciences, Whole Building Design Guide, "Commissioning Document Compliance and Acceptance," August 4, 2015.

appropriate role of Facility Management personnel. As a result, Facility Management staff had limited opportunities to become familiar with new building equipment and systems, which was necessary to adequately prepare to assume O&M of the new facilities.

Furthermore, the OBO Project Director instructed Facility Management personnel not to comment on quality assurance issues they observed during routine walk-throughs of the buildings.[22] Though not outlined in contract-specific requirements, this instruction was also contrary to OBO's Construction and Commissioning Guidelines regarding Facility Management's involvement in the turnover of new facilities. According to OBO, the Construction and Commissioning Guidelines is intended to be used as a reference manual to ensure consistent execution of OBO projects. Specifically, the guidelines state that the Project Director "will use the Facility Manager and key operation and maintenance staff as additional support during the Project Director's quality assurance efforts, working with the commissioning team in validating the contractor's proper installation, startup, and functional testing of equipment and systems." According to OBO, this is also a critical part of training O&M staff. [23] OIG previously reported that the lack of quality assurance oversight during key phases of the project contributed to the many of the identified deficiencies in the NOX and SDA-1.[24]

Finally, according to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, O&M deliverables, such as system and equipment manuals, as-built drawings, and warranty information, should be provided to the post Facility Manager at or before substantial completion. Although it is the Project Director's obligation to ensure that this has occurred, key O&M deliverables were not, in fact, provided to the Kabul Facility Manager when the OBO Project Director declared the NOX and SDA-1 substantially complete. According to OBO/CFSM/CM officials, because both buildings are part of a larger project involving the construction of multiple buildings and facilities, a number of the O&M deliverables are not due until the end of the entire project (currently scheduled for March 2019). Again, because OBO did not include phasing requirements in the contract modification, separate and distinctive commissioning, substantial completion, and turnover steps were not required for each facility constructed. OBO's decision to structure the contract in this manner meant that a number of key O&M deliverables were not provided at substantial completion. This

[22] Facility Management personnel typically conduct walk-throughs of new buildings in order to familiarize themselves with the buildings' equipment and systems as part of their preparation to assume O&M. OBO's Guide to Excellence in Diplomatic Facilities "encourages" posts to have Facility Management staff observe construction at various stages in order to become familiar with the new systems. Although not presented as a contract-specific requirement, OBO's Guide to Excellence in Diplomatic Facilities outlines the general policies that should be applied to all building projects.

[23] 2008 Construction and Commissioning Guidelines. Part 4, Chapter 7, paragraph 4.7.2, "Facility Manager Officer (FMO) Commissioning Role," states: "The Project Director will enroll the Facility Manager as part of the Project Director's team. The Facility Manager will attend regular project status meetings to coordinate Operation & Maintenance program development with the Project Director, commissioning team, and contractor. The Project Director will also use the Facility Manager and key Operation & Maintenance staff as additional support during the Project Director's Quality Assurance efforts, working with the Commissioning team in validating the contractor's proper installation, startup, and functional testing of equipment and systems. This is a critical part of training the Operation & Maintenance staff."

[24] *Management Assistance Report: Building Deficiencies Identified at U.S. Embassy Kabul, Afghanistan Need Prompt Attention* (AUD-MERO-17-44, June 2017).

in turn, hindered the ability of Facility Management personnel to adequately prepare to accept responsibility for O&M of the NOX and SDA-1.

Finding A: Major Building Systems Were Not Fully Commissioned

The Importance of Commissioning

According to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, commissioning is a quality-oriented process that provides verification and documentation that building systems perform according to the design intent and meet contract requirements. Specifically, the goal of the commissioning process is to provide the U.S. Government with a high level of confidence that building systems will operate within the functional performance guidelines, as required by the contract. According to OBO's Guide to Excellence in Diplomatic Facilities which outlines the general policies that should be applied to all building projects, commissioning of all major systems must be done before the project is declared substantially complete.

Additionally, according to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, commissioning tests are a key part of the commissioning process. Tests are conducted to verify that building equipment and systems are functioning as intended. The typical commissioning process first requires that individual pieces of equipment go through pre-functional checks, which are tests designed to ensure that every piece of equipment and every system in a building is installed correctly and can start up and run properly. Pre-functional checks are followed by functional performance tests to ensure that the equipment is functioning according to the intended design and contractual requirements. Specifically, functional testing verifies that equipment, systems, and sub-systems function according to the owner's project requirements and that the systems can perform as designed. For example, functional performance testing of an HVAC system might involve putting the system through its paces by manipulating a variety of conditions the HVAC controls and equipment will likely experience, such as switching from cooling to heating, from occupied to unoccupied mode, or from normal power to emergency power. Integrated systems tests are then performed to ensure that all systems that are required to interact with one another do so properly. For example, integrated systems tests may examine whether generators start when access to the main power grid is lost and whether they restore power and operability to systems such as air handlers and exhaust fans.

Industry standards and OBO's Construction and Commissioning Guidelines also stress the importance of having independent commissioning agents oversee the commissioning process. Specifically, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommends that commissioning agents have a separate professional services agreement to avoid conflicts of interest and to provide independence from other parties.[25] According to ASHRAE, the separate relationship allows a commissioning agent to act independently as the Director of Commissioning Activities, to focus on achieving the owner's

[25] ASHRAE Standard 202-2013, *The Commissioning Process for Buildings and Systems*. August 2013.

project requirements, and to communicate directly with the owner.[26] In the past, OBO's commissioning agents worked for general construction contractors who were also hired by the bureau. OBO's Construction and Commissioning Guidelines note that, "Because commissioning agents worked for the general contractor, fulfilling their commissioning duties conflicted with their loyalty to their employer." Specifically, OBO reported that this arrangement could potentially lead commissioning agents to sign off on building systems that were not yet fully functional.[27] Consequently, OBO moved responsibility for oversight of commissioning agents from its general contractors to OBO/CFSM/CM. According to OBO officials, the Commissioning Agent in Kabul reported directly to OBO's onsite Project Director.

According to OBO's Guide to Excellence in Diplomatic Facilities, the Facility Manager and staff at post should also be closely involved in the commissioning process, including attending regularly scheduled commissioning meetings with the contractor and observing commissioning start-ups and testing. Facility managers are the ultimate beneficiaries of a sound commissioning process because, according to OBO, the results of a strong commissioning process can be seen in the post-occupancy period after Facility Management personnel assume responsibility for O&M of the building. These benefits include improved system and equipment functionality, improved building O&M, a significant extension of equipment life cycle, and increased occupant satisfaction. Moreover, facility managers have an interest in the commissioning process because any negative effects of inadequate or incomplete commissioning will become their responsibility to address when they assume O&M of a new building.

What OIG Found

Even though OBO policies state that commissioning of all major building systems must be done before a project is declared substantially complete, OIG identified 25 systems that were not fully commissioned in one or both buildings before the buildings were declared substantially complete. OIG's findings regarding deficiencies affecting some of these systems are detailed in previously issued reports. OIG notes that both the Commissioning Agent and USACE considered 14 of these 25 systems to be major. Specifically, USACE reported that it considers any system that is essential for the facility to meet its mission requirements as "major." These included the hydronic water systems (which are used to provide heating and air conditioning), elevators, emergency generators in both buildings; chillers and boilers in the NOX; and the dedicated heat recovery system in the NOX.

Table 1 shows the status of the 14 building systems that the Commissioning Agent and USACE considered to be major in the NOX and SDA-1 at the time substantial completion was declared. The NOX was declared substantially complete in June 2015, and SDA-1 was declared

[26] While OBO is not obligated to follow ASHRAE guidance regarding the commissioning process, the standards outlined by ASHRAE are considered to be industry best practices. Additionally, OBO's Construction and Commissioning Guidelines specifically reference ASHRAE guidance as informing OBO's approach to the commissioning process. OBO's Construction and Commissioning Guidelines also echo ASHRAE recommendations regarding the importance of eliminating conflicts of interest for commissioning agents.

[27] The Bureau of Overseas Buildings Operations, Construction and Commissioning Division, "Construction and Commissioning Guidebook," July 2008.

substantially complete in January 2016 (see Appendix B for the commissioning status of all 25 building systems when substantial completion was declared).

Table 1: Commissioning Status of Major Building Systems at Substantial Completion

System	NOX	SDA-1
Water Distribution and Treatment	N/A	☒
Potable Water Pumps	N/A	☒
Water Treatment for Fire Water Storage Tanks	☒	☒
Elevators[a]	☒	☒
Hydronic Pumps	☒	☒
HVAC Water Treatment	☒	☒
Domestic Water Heaters and Pumps (Solar)	N/A	☒
Dedicated Heat Recovery Chillers	☒	☑
Modular Air Cooled Water Chillers	☒	☑
Water Tube Boilers	☒	☑
Fan Coil Units	☒	☑
Electrical Power Monitoring and Control	☒	☒
HVAC Instrumentation and Controls	☒	☑
Generator Sets – Emergency	☒	☒

☒ = System not fully commissioned at substantial completion.

☑ = System 100 percent commissioned at substantial completion.

N/A = System not applicable to the building in question.

[a]OBO's Office of Facility Management's Elevator Management Program is responsible for certifying elevators.

Source: OIG generated from data provided by the Commissioning Agent regarding the status of major building systems in the NOX and SDA-1 when substantial completion was declared.

When OIG requested information on the status of commissioning, including the dates that commissioning was completed for individual building equipment and systems, the OBO Project Director was unable to provide the information. Instead, he referred OIG to the Commissioning Agent, a response that raises questions about the extent to which OBO/CFSM/CM independently tracked the status of commissioning for the project. Without doing so, it is unclear how the OBO Project Director could verify that all major systems were commissioned before substantial completion, in line with the policies outlined in OBO's Guide to Excellence in Diplomatic Facilities.

Furthermore, USACE found that commissioning testing documentation for the NOX and SDA-1 was incomplete. As mentioned previously, pre-functional checks are tests designed to ensure that every piece of equipment and every system in a building is installed correctly and can start up and run properly. Functional performance tests, in contrast, ensure that the equipment is functioning according to the intended design and contractual requirements. However, the testing forms that OBO identified as functional tests were actually a combination of pre-

functional checks and functional performance test requirements, rather than separate and distinct forms for each type of test. USACE further noted that, in many cases, the functional performance test portion of the forms lacked sufficient detail to validate that the equipment performed as designed. On the basis of documentation provided, USACE believes that, even though individual pieces of equipment and components were tested in whole or in part, that information was insufficient to properly demonstrate integrated system performance or completion of the commissioning process.[28]

In a meeting to discuss the findings outlined in this report, OBO officials expressed concern regarding OIG's representation of those systems that were not fully commissioned at substantial completion and shown in Table 1. OBO officials stated that it would be more accurate to use percentages to indicate the amount of progress each system had made in the commissioning process. For example, some systems were 70-percent to 80-percent complete at the point the building was designated as substantially complete. According to OBO officials, they made a determination that the systems were sufficiently complete such they could be used for their intended purpose. This approach is not consistent with OBO's own policies that were in place at the time. Accordingly, in summarizing information on those systems that were not fully commissioned for Table 1, OIG referenced OBO's governing policies, which state that "commissioning of all major building systems must be done before a project is declared substantially complete."

Why this Occurred

The failure to complete the commissioning process occurred because of a variety of related factors. First, the OBO Project Director in Kabul and the Commissioning Agent had fundamental disagreements regarding the readiness of the systems in question. Second, OBO guidance is ambiguous regarding which systems must be fully commissioned prior to substantial completion. Third, the fact that the Commissioning Agent is subordinate to the Project Director means that the Project Director has ultimate authority over the commissioning process and, in Kabul, was able to exercise his discretion to overrule the Commissioning Agent. Finally, some information suggests that OBO in general and the Project Director in particular were under pressure to move embassy staff into more secure structures. Taken together, these factors led to a situation in which the two new buildings were declared substantially complete—a designation that, in turn, has significant implications for the Department's legal rights to seek redress for defects—before they were, in fact, fully ready for occupancy.

[28] OIG also obtained and analyzed OBO-sponsored facility condition assessment reports from six U.S. embassies around the world. The assessments were conducted by four of OBO's Independent Commissioning Agents. Four of the six assessment reports noted that little or no commissioning documentation could be found at the posts inspected. The missing documents included commissioning reports, functional performance test documents, and commissioning issues logs. In three of the six locations, the Facility Management staff did not recall any commissioning documentation being available when the project was completed. OBO conducted a recommissioning site assessment at the U.S. Embassy in Kampala, Uganda; a post-occupancy and retro-commissioning assessment at the U.S. Embassy in Conakry, Guinea; and facility systems condition assessments at the U.S. embassies in Algiers, Algeria; Bamako, Mali; Freetown, Sierra Leone; and Yaoundé, Cameroon.

The first reason that the commissioning process was not fully completed was because the OBO Project Director and the Commissioning Agent disagreed as to whether the systems in question were complete. The OBO Construction Manager told OIG that the Commissioning Agent refused to sign off on items that were 80-percent to 90-percent complete. He also expressed concern that the Commissioning Agent was maintaining a list of noted defects observed during the course of her work that, in his opinion, was outside the scope of her duties. He believed this distracted the Commissioning Agent from her core responsibilities, which should have been focused on overseeing commissioning testing.

The Commissioning Agent, however, stated that a number of significant outstanding issues prevented her from signing off on commissioning items. In a briefing report on the NOX prepared by the Commissioning Agent for Facility Management personnel in August 2015 (1 month after occupancy), she noted a number of problems resulting from proceeding with substantial completion and occupancy before completing the commissioning process:

- "Chillers were not fully operational."
- "Boilers were not operational."
- One of the fan coil units was not operational.
- "Chilled hydronic water secondary pumps were not operating correctly."
- "Power monitoring system was not operational."
- Correct domestic water booster pumps had not yet been installed.
- "Lightning protection and grounding and bonding not tested."
- "Building automation system and testing and balancing not completed."
- Hot water temperature control in piping systems does not meet contract specifications.

The Commissioning Agent reported that she would not sign off on the systems until Caddell resolved the issues under the required terms of the contract. Additionally, in some cases, Caddell did not have adequate staff onsite to facilitate key commissioning activities. For example, Caddell is required to have staff members onsite (usually a supplier or mechanical supervisor) who can demonstrate operation of the boilers and chillers. This is considered a key step in the commissioning process. Instead, the embassy's principal O&M contractor, PAE Government Services (PAE), performed this function for a number of pieces of equipment. Caddell had initially planned for manufacturers' representatives to come to Kabul to conduct the start-up and functional testing of some new systems and equipment. However, in some cases, manufacturers were reluctant to send staff to a high-threat post, which meant that Caddell ended up experiencing delays in their originally planned schedule to conduct start-up and functional testing of certain pieces of equipment. As a result, Caddell had to rely on PAE for assistance. In some cases, if equipment is not started up by a factory-certified technician, it may void the warranty. The Commissioning Agent described this situation as highly unusual and stated that it also contributed to some of the delays in completing the commissioning process.

The second and third reasons that commissioning was not fully completed are closely connected. Although OBO policies state that the commissioning of all major systems must be done before the project is declared substantially complete, the guidelines do not clearly define which building systems and equipment qualify as "major" and thus must be fully commissioned

prior to substantial completion. There is also no explicit guidance which requires OBO project directors to certify that building systems are fully commissioned prior to substantial completion. Furthermore, the fact that commissioning agents are subordinate to project directors means that the Project Director in Kabul had ultimate authority over the commissioning process and was able to exercise his discretion to overrule the Commissioning Agent. Put another way, notwithstanding the disagreements described previously, the Project Director could effectively overrule the Commissioning Agent on the basis of his position and on relatively ambiguous guidance regarding which systems must be fully commissioned prior to substantial completion. The OBO Project Director in fact explained that he did not want to continue to wait on the Commissioning Agent to sign off on items that he did not think were significant. Moreover, he did not believe the commissioning items that were outstanding would interfere with occupancy. As a result, he said that OBO/CFSM/CM decided to move forward with substantial completion and occupancy even though commissioning for a number of building systems and equipment had not been fully completed. As a result, the OBO Project Director declared the buildings substantially complete, which, according to OBO policies and procedures, initiated the 1-year warranty period on building systems and equipment, including those systems that had not yet been fully commissioned.[29]

In practice, the Commissioning Agent in Kabul did not function independently, even though industry standards and OBO's Construction and Commissioning Guidelines stress the importance of such independence. Instead, the Project Director was ultimately able to disregard the positions of the Commissioning Agent with which he disagreed and to proceed with substantial completion even though commissioning was incomplete. The Commissioning Agent who worked on the NOX and SDA-1 also reported that she faced significant pressure from OBO/CFSM/CM to approve systems that she did not believe were complete. Specifically, she reported that the OBO Project Director and Construction Manager (who serves as the Project Director's Deputy) pressured her to sign off on building equipment and systems before they were fully commissioned. During the final month leading up to substantial completion of the NOX, the Commissioning Agent stated that she was pressured almost every day to sign off on building systems that were not yet fully functional.[30]

In addition to the pressure to sign off on systems that were not complete, the Commissioning Agent stated that the OBO Project Director often disagreed with her assessments of what constituted a valid issue to be addressed as part of the commissioning punch list. The OBO Project Director told her that he believed the items included in her assessments constituted quality control issues that were not within her area of responsibility. However, the

[29] According to FAR 52.246-21, the warranty period should start at final acceptance or, in the event that the Government takes possession of any part of the work before final acceptance, on the date that the Government takes possession of the work. This issue is discussed in more detail later in this section.

[30] Other project stakeholders, including Facility Management personnel, attended meetings in which the status of commissioning was discussed. They confirmed that the OBO Project Director and Construction Manager pressured the Commissioning Agent to sign off on systems that were not complete. At one point, several Facility Management staff members were so concerned that they brought the issue to the attention of the Deputy Management Counselor at post in order to discuss whether the pressure being exerted on the Commissioning Agent constituted a "hostile work environment."

Commissioning Agent maintained that the items she was noting on her punch list were consistent with the types of items she had previously noted on many other OBO projects she has worked on around the world. The Commissioning Agent stated that the OBO Construction Manager working onsite in Kabul also ignored her judgment on multiple occasions and instructed her not to list noted defects on her punch list. For example, she stated that on one occasion, she noted that the hydronic pumps were visibly leaking oil but the OBO Construction Manager explicitly instructed her not to record it on the punch list.

Several OBO engineers and Facility Management personnel who have worked on other OBO construction projects told OIG that disagreements between commissioning agents and OBO project directors are not uncommon. They noted that the pressure exerted by OBO/CFSM/CM to move through the commissioning process as quickly as possible is a widespread problem that has also occurred in other new embassy construction projects around the world. Because commissioning agents report directly to OBO/CFSM/CM, OBO project directors and construction managers have substantial input into commissioning agents' work. In the course of OIG's audit, multiple project stakeholders raised concerns about OBO/CFSM/CM's oversight of commissioning agents, noting that OBO project directors have competing responsibilities for providing both construction and commissioning oversight. One facility manager observed that OBO/CFSM/CM has a vested interest in moving through commissioning as quickly as possible to minimize the costs of having construction management staff on the ground and to meet project deadlines.

OBO guidance states that facility managers are the ultimate beneficiaries of a sound commissioning process and should be closely involved in the commissioning process. However, in Kabul, Facility Management staff had little say in how the commissioning process was carried out. Despite their concerns about the pressure being placed on the Commissioning Agent as well as the potential consequences of how an incomplete commissioning process might impact O&M in the future, the OBO Project Director had ultimate authority and discretion to declare the buildings substantially complete.

A final potential factor influencing the incomplete commissioning process was the role of security considerations. Facility Management personnel stated that OBO was under pressure to move embassy staff into hardened structures as soon as possible because of the security situation in Kabul and expressed concern that OBO's decision to declare the buildings substantially complete was premature as a result. At the time, a number of embassy staff members were living and working in temporary converted shipping containers, rather than permanent hardened structures such as the NOX and SDA-1.[31] The security situation in Afghanistan is extremely unstable, and the Department continues to maintain that the threat to all U.S. citizens in Afghanistan remains critical. The OBO Project Director in Kabul acknowledged such pressure but stated that OBO did not accelerate the project schedule in response to these security concerns. He maintained that all systems were designed and installed according to

[31] According to OBO, hardened structures are buildings with exteriors consisting of hardened materials that provide forced entry, ballistic- and blast-resistant protection for building occupants, which is considered particularly important in a high-threat post like Afghanistan.

contract specifications and that only minor items remained to be addressed at the time of occupancy. However, multiple stakeholders, including several OBO/CFSM/CM engineers and a number of facility managers expressed concern that, in the case of the NOX, the building was not ready for substantial completion. One facility manager in Kabul observed that, in the case of the NOX, hundreds of workers were still working on the building on the day that substantial completion was declared. He noted that, if the building was truly substantially complete, only a small number of workers would be required to close out the minor issues still remaining on the punch list.

In statements made during country team meetings with the embassy community, the Ambassador indicated that, although he also wanted to get embassy staff into hardened structures as quickly as possible in response to ongoing security concerns, he wanted OBO to ensure that the buildings were truly complete and ready for occupancy before moving forward with substantial completion. Moreover, DS officials, who are responsible for protecting the embassy and its personnel, also confirmed the longstanding goal to move embassy staff into hardened structures but stated that no changes in the threat level at Embassy Kabul would have resulted in a formal directive to accelerate the construction and commissioning process.

One facility manager in Kabul stated that, if security concerns were driving the decision to accelerate substantial completion, he would have understood as long as there were candid conversations about the need to occupy the buildings as quickly as possible. If that were the case, he would have expected transparent discussions about the potential consequences of occupying the buildings early in response to security concerns and reasonable solutions to address those consequences. However, this was not OBO/CFSM/CM's approach to the process, and OBO currently has no such guidelines in place. In the case of the NOX, rather than acknowledge that the construction team was not prepared to meet the originally planned substantial completion deadline, the OBO Project Director took the stance that all building systems were complete and ready to function properly, although it was clear to multiple project stakeholders that this was not in fact the case.

Caddell staff members also acknowledged the accelerated construction schedule, though OBO/CFSM/CM never formally communicated plans to fast-track the project. When Caddell staff members were informed of OBO's decision to move forward with substantial completion, they told the OBO Project Director that commissioning could not be completed by the identified substantial completion date.

The OBO Project Director told OIG that, because Caddell was responsible for completing other building projects at Embassy Kabul, Caddell could be asked to correct deficiencies in the NOX and SDA-1 after the declaration of substantial completion under the terms of its contract. The OBO Project Director also stated that OBO had an informal agreement with Caddell to address any ongoing issues affecting building equipment and systems after substantial completion and occupancy.

Finally, in a meeting to discuss the findings outlined in this report, OBO again emphasized the critical security situation in Kabul and the need to move embassy staff into hardened structures

as quickly as possible. OBO officials repeated their emphasis on the "extraordinary" security threat facing Embassy Kabul during the time that the NOX and SDA-1 were being built and stated that they would have moved embassy staff into the NOX and SDA-1 even earlier if it had been possible.[32] Despite the fact that commissioning was not complete for several key systems when the NOX and SDA-1 were declared substantially complete, OBO officials nonetheless maintain that the security situation in Kabul and the pressure to move staff into hardened structures did not result in an accelerated building schedule or a premature declaration of substantial completion. OBO officials stated, "The Department made a risk-based decision to occupy buildings based on life-safety over minor punch list items."

The Consequence of Premature Commissioning

Because the Commissioning Agent's input was discounted, defects and deficiencies, which would normally be identified and addressed during the commissioning process, were not fully addressed prior to substantial completion. Resulting maintenance problems accordingly became the responsibility of Facility Management personnel and O&M contractors. Furthermore, because the commissioning process was not finished before substantial completion, OBO cannot be assured that all building systems were designed, installed, and tested to operate and perform as intended.

Both OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities and OBO's Guide to Excellence in Diplomatic Facilities state that substantial completion is a contractual milestone that transfers responsibility for maintenance and utilities to the Department and begins the warranty period for systems and equipment.

In the case of the NOX and SDA-1, the decision to accept facilities without fully completing the commissioning process contributed to a range of building deficiencies after occupancy. OIG previously reported that these deficiencies occurred in both buildings and affected major systems, including plumbing, electrical systems, HVAC systems, and fire-safety systems.[33] Furthermore, these contracts incorporated OBO's own provisions regarding the warranty period for each building. Specifically, OBO indicated that the warranty period for both buildings began at substantial completion. As a result, the warranties on both buildings expired before many of the deficiencies identified and reported by OIG were fully addressed. As a result, the Department now risks assuming the cost for all outstanding repairs to systems and equipment that are not functioning properly.

On a separate but related point, OIG notes that OBO's provisions regarding warranties are potentially inconsistent with the FAR. According to FAR 52.246-21, the warranty period starts at the date of final acceptance of the work unless the Government takes possession of any part of the work before final acceptance, in which case, the warranty shall continue for 1 year from the date the Government takes possession. As noted above, however, OBO's own provisions state

[32] OIG has also reviewed the classified information regarding the specific threats against the Embassy Kabul Compound that confirms the security situation in Kabul during the years in question.

[33] *Management Assistance Report: Building Deficiencies Identified at U.S. Embassy Kabul, Afghanistan Need Prompt Attention* (AUD-MERO-17-44, June 2017).

that the warranty period begins once substantial completion is declared rather than at final acceptance. Moreover, when the Government does take possession of the work before final acceptance, OBO's policies and procedures do not define when possession occurs. That is, OBO's policies do not state whether the Government officially takes possession of the completed work at the time that substantial completion is declared or at the time of occupancy.

Recommendation 1: OIG recommends that the Bureau of Overseas Buildings Operations issue a Construction Alert defining which building equipment and systems must be fully commissioned prior to substantial completion and update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to include those requirements.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation" and that its "current policy allows for the flexibility necessary to make decisions based on life-safety issues, and still include management controls to determine what needs to be fully commissioned at the appropriate time in the project." Nevertheless, OBO stated that it is "adding a full-time O&M Transition Coordinator (OMTC) position, independent of the General Contractor, who will help ensure that the turnover of projects is a smooth transition for all parties." OBO added that, "Construction, Facilities, and Security Management Directorate (OBO/CFSM) has instituted an Operations & Maintenance (O&M) Turnover Matrix for OBO's projects" that will increase the number of deliverables involved in the turnover of a project.

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

OIG notes a number of specific concerns with OBO's responses.

First, at the time of the audit, relevant OBO guidance including OBO's Guide to Excellence in Diplomatic Facilities required commissioning of all major systems before a project could be declared substantially complete. (Although in its responses to this report, OBO has indicated that the guide is no longer being used, at the time this audit was conducted, the Guide to Excellence in Diplomatic Facilities was a principal document governing OBO's work worldwide. Specifically, according to OBO, the Guide was intended to outline the general policies to be applied to all building projects. Further, OBO has not provided any information indicating that the Guide has been formally retired, rescinded, or superseded). OIG also referenced OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01), which also states that most commissioning activities should be targeted for completion by the substantial completion date of the project. It notes that the only exceptions might include seasonal equipment testing during certain times of the year or systems operational review prior to the expiration of the 1-year warranty period. Notwithstanding this guidance, in this audit, OIG identified 25 major systems that were not fully commissioned in the NOX and SDA-1 when these buildings were declared substantially complete. OIG concluded that a primary cause of this condition was

that OBO's applicable guidance does not clearly define which building systems and equipment qualify as "major" (and thus must be fully commissioned prior to substantial completion), nor does it explicitly require OBO project directors to certify that building systems are fully commissioned prior to substantial completion.

Second, no guidance in effect at the time of the audit discussed the "flexibility" that OBO now describes. Specifically, neither OBO's Guide to Excellence nor OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) reference exceptions when following the commissioning process, such as flexibility to make decisions on the basis of life-safety issues or other factors, as OBO asserts. Indeed, as noted in more detail subsequently, OIG included Recommendation 5(a) precisely to address such issues. Although OBO states that its "current" policy permits such flexibility, it is unclear to OIG which policies OBO is referencing.

Finally, although OIG supports OBO's efforts to improve its overall processes, it is unclear how the addition of an O&M Transition Coordinator and an O&M Turnover Matrix would address the premature declaration of substantial completion as OIG found occurred in the NOX and SDA-1. The description of the O&M Turnover Matrix, for example, states primarily that the matrix will increase the number of O&M deliverables. The description of the Transition Coordinator explains that this individual will help ensure a smooth transition from construction to the O&M phase. It is unclear how the O&M Transition Coordinator or the use of the O&M Turnover Matrix will specifically address the concerns affecting the commissioning process set forth in this report. In particular, by not completing the commissioning process before the declaration of substantial completion, OBO missed an important opportunity to ensure that all building systems in the NOX and SDA-1 were designed, installed, and tested to operate and perform as intended prior to the start of the warranty period. OIG previously reported that the lack of quality assurance oversight during key phases of the project contributed to a range of building deficiencies in the NOX and SDA-1 after occupancy.

This recommendation will be considered resolved when OBO defines which building equipment and systems must be fully commissioned prior to substantial completion and updates its policy to include those requirements. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has taken action to implement the recommendation.

Recommendation 2: OIG recommends the Bureau of Overseas Buildings Operations require project directors to certify that all required building equipment and systems are fully commissioned prior to issuing the certificate of substantial completion.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation" and that its "current policy allows for the flexibility necessary to make decisions based on life-safety issues, and includes management controls to determine what needs to be fully commissioned at the appropriate time in the project." OBO stated that "[p]er the response to recommendation one, OBO has

chosen to include additional management controls to ensure that the commissioning status is fully transparent and utilizes the best collective judgement of the [Facility Manager] and [Project Director] deployed at post, supported by the commissioning agent."

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

OIG's concerns with OBO's response to this recommendation are similar to those set forth under Recommendation 1. In particular, OBO's guidance does not clearly define which building systems and equipment must be fully commissioned prior to substantial completion, nor does it explicitly require OBO project directors to certify that building systems are fully commissioned prior to substantial completion. OIG accordingly reiterates the importance of clearly defining in written guidance which equipment and systems must be fully commissioned before substantial completion.

Also, as OIG noted previously regarding Recommendation 1, it is unclear to what policy OBO refers when it describes "flexibility" in its current approaches. OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) does not, for example, reference the "flexibility necessary to make decisions based on life-safety issues" nor does it reference "management controls to determine what needs to be fully commissioned at the appropriate time in the project," as OBO asserts. OBO also does not identify what additional management controls it has developed as part of the current policy. In addition, OBO has not explained how either of the new approaches—namely, the introduction of the O&M transition matrix or the addition of a Transition Coordinator—will resolve the concerns identified in this report. Specifically, it is unclear how the appointment of the Transition Coordinator or the introduction of the O&M transition matrix will ensure that all required building equipment and systems are fully commissioned prior to issuing the certificate of substantial completion. Finally, OBO does not state where its "current policy" is outlined.

In short, none of the policies that applied at the time of the audit or that OBO has referenced in its response clearly provide either the cited flexibility or the necessary clarity to resolve the recommendation.

This recommendation will be considered resolved when OBO agrees to implement it or provides an acceptable alternative that meets the intent of the recommendation, which is to correct ineffective commissioning practices. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has required project directors to certify that all required building equipment and systems are fully commissioned prior to issuing the certificate of substantial completion and has updated its commissioning policies and directives accordingly.

Recommendation 3: OIG recommends that the Bureau of Overseas Buildings Operations establish and implement internal controls to verify that all required documentation in support of commissioning testing is completed prior to substantial completion. This should include all pre-functional checks, functional performance tests, and integrated systems tests to ensure that building equipment and systems are functioning as intended.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation" and that its "current policy allows for the flexibility necessary to make decisions based on life-safety issues." OBO stated that "[p]er the response to recommendation one, OBO has chosen to include additional management controls to ensure that the commissioning status is fully transparent and utilizes the best collective judgement of the [Facility Manager] and [Project Director] deployed at post, supported by the commissioning agent."

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) states that commissioning tests are a key part of the commissioning process. Tests are conducted to verify that building equipment and systems are functioning as intended. Moreover, OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) also states that substantial completion is a contractual milestone that transfers responsibility for maintenance and utilities to the Department and begins the warranty period for systems and equipment. In this audit, OIG found that commissioning testing documentation for the NOX and SDA-1 was incomplete and substantial completion was declared before ensuring building equipment and systems were fully functioning as intended. OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) does not reference exceptions—such as the flexibility to make decisions on the basis of life-safety issues or other factors—when following the commissioning process as OBO asserts. Thus, the "flexibility" that OBO mentions again in response to this recommendation is not substantiated, and OBO does not explain how such flexibility would, in any event, help ensure that required documentation in support of commissioning testing is completed.

This recommendation will be considered resolved when OBO agrees to implement it or provides an acceptable alternative that meets the intent of the recommendation. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has established and implemented internal controls to verify that all required documentation in support of commissioning testing is completed prior to substantial completion. This should include all pre-functional checks, functional performance tests, and integrated systems tests to ensure that building equipment and systems are functioning as intended.

Recommendation 4: OIG recommends that the Bureau of Overseas Buildings Operations move responsibility for oversight and management of commissioning agents from the Office of Construction Management to the Office of Facility Management. Specifically, the Office of Facility Management should oversee all aspects of the commissioning process, including (a) ensuring that commissioning agents have fulfilled the terms outlined in the statement of work; (b) verifying that all building systems are designed, installed, and tested to meet the Department's contract requirements; and (c) ensuring that commissioning of all major systems is done before the project is declared substantially complete.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation." Nevertheless, OBO stated that it "has created a mandatory [Operations and Maintenance Transition Coordinator] position for all new capital construction projects" and that this position reports to OBO's Office of Construction Management on issues concerning commissioning and system acceptance problems or concerns for immediate resolution prior to final acceptance of the facility by the Contracting Officer. OBO added that this new position, in addition to new management controls, would ensure that proper checks and balances are in place and that the intent of the contract requirements is met.

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

Industry standards, ASHRAE, and OBO's Construction and Commissioning Guidelines stress the importance of having independent commissioning agents oversee the commissioning process to avoid conflicts of interest and to eliminate the risk that commissioning agents might feel pressured to sign off on building systems that are not yet fully functional. In this audit, OIG found that the organizational structure and lines of authority in place at the time meant that the Commissioning Agent in Kabul could not function independently and that her input was discounted. Because the Commissioning Agent's input was discounted, defects and deficiencies, which would normally be identified and addressed during the commissioning process, were not fully addressed prior to substantial completion.

With regard to OBO's response to the recommendation, it is unclear how the newly created Operations and Maintenance Transition Coordinator position would address the Commissioning Agent's lack of independence. Further, OBO does not explain whether the Operations and Maintenance Transition Coordinator will report to OBO's Office of Construction Management and thus could also potentially face conflicts of interest and an impaired ability to function independently. Although a "smooth transition" from construction to the O&M phase is, of course, desirable, OIG's report identified flaws in the organizational placement of the commissioning agent; the mere existence of a Transition Coordinator does not address these concerns. The response represents that the Transition Coordinator will be "independent of the General Contractor," but there is no information as to where the Transition Coordinator will be situated organizationally within OBO. If the Transition Coordinator reports to the Office of Construction Management, the problems identified in

this report might be exacerbated rather than minimized. Recommendation 4, however, provides a means by which OBO can ensure the independence of commissioning agents and prevent conflicts of interest in line with current industry standards and OBO guidance.

This recommendation will be considered resolved when OBO agrees to implement it or provides an acceptable alternative that meets the intent of the recommendation, which is to correct ineffective commissioning practices. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has moved responsibility for oversight and management of commissioning agents from the Office of Construction Management to the Office of Facility Management.

Recommendation 5: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to include procedures for identifying and approving instances in which it is appropriate to issue the certificate of substantial completion before commissioning has been fully completed. Specifically, these protocols should include mechanisms that (a) require a formal waiver be issued by the construction executive to proceed with substantial completion and occupancy even though commissioning is not yet complete, (b) establish milestones for completing the commissioning process after substantial completion and occupancy, and (c) execute a contract modification requiring the contractor to grant an extended warranty for those systems that were not commissioned at the time of substantial completion.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation" and that its "current policy allows for the flexibility necessary to make decisions based on life-safety issues, and includes management controls to determine what needs to be fully commissioned at the appropriate time in the project."

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

As with previous recommendations, OBO's responses do not fully address the requirements and limitations of relevant guidance. OBO's Guide to Excellence in Diplomatic Facilities, which according to OBO, outlines the general policies that should be applied to all building projects during the time period this audit was conducted, states that commissioning of all major systems must be done before the project is declared substantially complete. Further, OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) also emphasizes the importance of commissioning and states that, with the exception of seasonal testing, most commissioning activities should be completed by the substantial completion date of the project. Moreover, neither OBO's Guide to Excellence nor P&PD CM 01 references exceptions when following the commissioning process, such as flexibility to make decisions on the basis of life-safety issues or other factors, as OBO asserts.

As also noted in the report, in the audit exit conference to discuss the findings in this report, OBO officials told OIG that they faced significant pressure to move embassy staff into hardened structures as a result of the urgent security issues in Kabul. At the same time, OBO officials maintained that they did not accelerate the project schedule and that only "minor" items remained to be corrected at the time that substantial completion was declared. OIG disagrees that the 25 building systems that were not fully commissioned at substantial completion (including the hydronic water systems used to provide heating and air conditioning, elevators, emergency generators, and chillers and boilers) can be characterized as "minor" items. With respect to the NOX, even the Project Director identified more than 1,000 items as outstanding at the time of substantial completion. Furthermore, multiple project stakeholders, including OBO officials, agreed that the number of outstanding items on the contractor's punch list was unusually large.

Nevertheless, OIG recognizes the specific threats against the U.S. Embassy in Kabul and understands that future projects may arise in which OBO is faced with accelerating substantial completion and occupancy in response to security concerns. It is precisely for this reason that OIG included Recommendation 5, which is intended to assist OBO in addressing this potential scenario. Both OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) and its Guide to Excellence in Diplomatic Facilities identify substantial completion as a contractual milestone that begins the warranty period for all systems and equipment. This recommendation is intended to help OBO make informed decisions on the basis of life-safety issues, when simultaneously mitigating any risks associated with accepting facilities prior to fully completing the commissioning process and the subsequent start of the warranty period. Put another way, this recommendation is intended to provide the guidance necessary to make informed decisions regarding how best to balance competing interests and to avoid a situation like the one recounted here.

This recommendation will be considered resolved when OBO agrees to implement it or provides an acceptable alternative that meets the intent of the recommendation, which is to facilitate informed decisions in which life-safety issues exist. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has developed procedures for identifying and approving instances in which it is appropriate to issue the certificate of substantial completion before commissioning has been fully completed.

Recommendation 6: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) as well as its Guide to Excellence in Diplomatic Facilities to ensure that references to the commencement of the warranty period are consistent with FAR 52.246-21, Warranty of Construction. Specifically, existing policies and procedures should be updated to indicate that the warranty period either begins at final acceptance unless the Government takes possession of any part of the work before final

acceptance, in which case, the warranty shall begin at the date the Government takes possession. The Bureau of Overseas Buildings Operations should also explicitly define when the Government officially takes possession of the completed work, including whether possession occurs at substantial completion or at the time of occupancy.

Management Response: OBO concurred with the recommendation, stating that it "will make sure to update documents consistent with FAR 52.246-21. However, the Guide to Excellence in Diplomatic Facilities will not be updated as it is no longer in use."

OIG Reply: On the basis of OBO's concurrence with the recommendation and planned actions, OIG considers this recommendation resolved pending further action. This recommendation will be closed when OIG receives documentation demonstrating that OBO has updated the Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to indicate that the warranty period either begins at final acceptance unless the Government takes possession of any part of the work before final acceptance, in which case, the warranty shall begin at the date the Government takes possession. OBO should also explicitly define when the Government officially takes possession of the completed work, including whether possession occurs at substantial completion or at the time of occupancy.

Finding B: Key Project Documents Were Not Prepared

The Importance of Preparing Key Documents

The National Institute for Building Sciences has identified key documents that should be developed in support of each building project.[34] OBO also requires some of, but not all, the same documents to be prepared by either Caddell or the Commissioning Agent, under the terms of their respective contracts. For example, Section 01811 of the contract specifications, "Start-Up and Commissioning," specifies that, as part of each formal design review submission, the contractor shall prepare Basis of Design documentation for the Project Director's review and approval. According to the specifications, this documentation shall address all building systems that are to be commissioned. The same contract specifications also require the commissioning agent to prepare a project-specific commissioning plan, based on the OBO generic commissioning plan template. Finally, Section 01811 of the contract specifications state that the contractor shall review a final commissioning report prepared by the Commissioning Agent and provided at substantial completion.

What OIG Found

OBO did not ensure that Caddell or the Commissioning Agent in Kabul prepared and submitted several key project documents in advance of substantial completion and occupancy of the NOX

[34] As discussed earlier, the National Institute of Building Sciences is a non-profit, non-governmental organization that includes representatives from government, industry, labor, and regulatory agencies to serve the country by supporting advances in building science and technology. It is authorized by the U.S. Congress and provides extensive materials and guidance regarding best practices that are widely used in the public and private sectors.

and SDA-1. Some documents were not prepared at all. Others were not prepared and submitted at the appropriate stage of the construction project. Furthermore, when project documents were prepared, separate documents were not developed in support of each facility constructed. This occurred because the NOX and SDA-1 were added to Caddell's existing contract as a modification without separate and distinct required completion dates for each facility; accordingly, the contract did not require separate project documents for each building constructed. According to USACE, in a phased construction project that involves multiple buildings or facilities, separate project documents should be developed in support of each building because unique features, requirements, and considerations may need to be addressed in each document. These documents are essential to define and demonstrate how key project requirements were met, to support the commissioning process, and to inform O&M efforts following substantial completion.

- Owner's Project Requirements—The Owner's project requirements outline the functional requirements of a project, including project goals, performance criteria, cost considerations, and benchmarks. They should quantitatively define expectations for the performance and operational requirements of the buildings' systems. According to the contract specifications, the owner's project requirements will be jointly prepared by the Commissioning Agent and OBO and provided to the contractor.[35] However, no single document was required to be prepared and submitted for the construction projects at Embassy Kabul. Instead, OBO told OIG that the owner's project requirements for the NOX and SDA-1 were essentially an aggregate of the codes, standards, and contract specifications used in support of the project. Without a single document to define performance requirements, OBO has limited means to establish the acceptance criteria against which building systems will be evaluated.
- Basis of Design—The Basis of Design document serves as the link between what the owner expected and how the contractor complied with those expectations. It is therefore critical to project success. The document records the concepts, decisions, and product selections used to meet the owner's project requirements and to satisfy applicable regulatory requirements, standards, and guidelines. It also records the major thought processes and assumptions used to meet the owner's project requirements. According to the contract specifications, Caddell was required to prepare and submit a Basis of Design document for review and approval by the OBO Project Director.[36] OBO confirmed that a Basis of Design document is required but stated that Caddell's Basis of Design documentation is still under review and will not be finalized until the end of the entire construction project. According to Caddell, the project completion date is currently scheduled for March 2019. This approach does not support proper commissioning practice because a Basis of Design document should precede and underlie the commissioning plan for each facility constructed at Embassy Kabul.
- Commissioning Plan—According to the National Institute of Building Sciences, a commissioning plan is essential to all projects and allows project participants to jointly

[35] Contract specification 01811, "Start-Up and Commissioning," Section 3.02.

[36] Ibid.

plan for key commissioning requirements and milestones. The plan defines the process for verifying that building systems are designed, installed, functionally tested, and capable of being operated and maintained according to U.S. Government requirements. Details of systems tests and procedures, assembly-specific checklists, and documentation requirements are all incorporated into the commissioning plan. According to the contract specifications, the Commissioning Agent should develop a project-specific commissioning plan based on OBO's generic commissioning plan template.[37] However, OBO reported that for the NOX and SDA-1, a project-specific commissioning plan was not developed and that the generic OBO commissioning plan was used instead. Furthermore, separate commissioning plans were not developed for each building. According to USACE, for projects with multiple buildings, consideration should be given to developing a commissioning plan for each facility, because features or systems unique to each building may need to be addressed in the commissioning plan. However, both the NOX and SDA-1 were added to Caddell's contract as a modification, without separate and distinctive commissioning requirements for each facility.

- Commissioning Systems Manuals—The commissioning systems manual provides the information needed to understand and properly operate the building's systems and assemblies. It should be understandable to people unfamiliar with the project. Similar to an owner's manual for a car, the systems manual includes information essential to operating the building, such as as-built drawings, training documents, specifications, and commissioning documentation. It should be structured to promote ease of access and use by building management staff. However, Caddell did not develop a commissioning systems manual for the buildings at Embassy Kabul and, according to OBO, it was not required as part of Caddell's contract. OBO reported that it is considering adding a requirement for commissioning systems manuals in the future. Without a systems manual for each building, Facility Management personnel and O&M contractors may not have key information needed to understand and properly operate and maintain the building and its systems.
- Final Commissioning Report—The final commissioning report should facilitate the building turnover process by providing key information to O&M personnel. The report, which should accompany the construction contractor's turnover documentation, should incorporate commissioning requirements, processes, documentation, and findings. The commissioning report also should include information pertinent to the maintenance of the building, including corrective action reports, training forms, completed systems readiness checklists, and inspection reports for commissioned systems. The commissioning report should also identify any variances between the original design intent and as-built conditions. OBO stated that a final commissioning report is not required to be developed by the Commissioning Agent until after the 11-month warranty meetings for both buildings.[38] Without a final commissioning report developed

[37] Contract specification 01811, "Start-Up and Commissioning," Section 1.03C.

[38] The 11-month warranty meeting for the NOX took place May 16–18, 2016. The 11-month warranty meeting for SDA-1 took place January 10–11, 2017. The 1-year warranty periods for both buildings expired for the NOX on June 22, 2016, and for SDA-1 on January 16, 2017.

at the time of substantial completion and occupancy of each building, facility managers lack valuable information pertinent to the O&M for each building.[39]

Why this Occurred

OBO did not receive key project documents for at least two reasons. First, the governing contract limited OBO's ability to demand some documents. When the decision was made to modify the contract to include the construction of the NOX and SDA-1 facilities, that modification did not include phasing requirements, including separate and distinct commissioning, substantial completion, turnover, and acceptance requirements. As a result, the contractor is only contractually required to perform commissioning activities once and to submit one set of the required manuals, reports, and project-specific documentation that encompasses all the facilities constructed as part of this contract. The OBO Project Director acknowledged that the lack of a phased approach to the project has been problematic in some respects and will be corrected in future contracts. Second, OBO simply failed to ensure compliance with its own best practices as well as the contractual provisions that directed Caddell and the Commissioning Agent to prepare and submit the required documents.

The Consequence of Not Preparing Key Documents

Because OBO did not ensure the preparation of key documents prior to substantial completion and occupancy of each building, OBO does not have sufficient criteria for determining the extent to which agreed-upon project requirements were followed at each step of the process. USACE further noted that, without complete project documentation prior to substantial completion, it is impossible to:

- Determine if the owner's requirements were achieved
- Determine if the design intent was achieved
- Provide a baseline understanding of the facility at the point of turnover
- Determine what adjustments can and should be implemented to achieve occupant satisfaction and meet anticipated energy goals

Moreover, the absence of required documentation creates challenges for maintenance personnel because of the lack of documented standards and benchmarks designed to ensure that the buildings are maintained as originally intended.

Recommendation 7: OIG recommends that the Bureau of Overseas Buildings Operations establish requirements in its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) for the preparation and submission of key project documents for newly constructed facilities, including (a) owner's

[39] Although section 01811 of the contract specifications state that the contractor shall review a final commissioning report prepared by the Commissioning Agent and provided at substantial completion, OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities notes that certain commissioning activities, such as seasonal equipment testing during certain times of the year, will occur after the facility is fully operational and under full load.

project requirements, (b) a Basis of Design document, (c) systems manuals, (d) a commissioning plan, and (e) a final commissioning report. These documents should be prepared and submitted at the appropriate interval of construction for each building or facility constructed by the Bureau of Overseas Buildings Operations. Additionally, the requirements should indicate the parties responsible for preparation, review, and approval of each of the key project documents.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation" and that "contract deliverables are included in the appropriate contract language." For example, OBO stated that "the Systems Manual is a deliverable from the general contractor and the Commissioning Plan and Commissioning Report are deliverables from the commissioning agent." OBO also provided templates of these and other documents along with its response to a draft of the report (see Appendix D).[40]

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

OIG agrees with OBO that the contract requires delivery of the Systems Manual from the general contractor and the Commissioning Plan and Commissioning Report from the Commissioning Agent. However, as OIG describes in this report, OBO did not ensure that Caddell or the Commissioning Agent in Kabul prepared and submitted these required documents for the NOX and SDA-1. Some documents were not prepared at all, and others were not prepared and submitted at the appropriate stage of the construction project.

This recommendation will be considered resolved when OBO agrees to implement or provides an acceptable alternative that meets the intent of the recommendation, which is to ensure OBO has sufficient criteria for determining the extent to which agreed-upon project requirements were followed at each step of the commissioning process.

This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO requires the preparation and submission of key project documents for newly constructed facilities, at the appropriate interval of construction, and specifies the parties responsible for preparation, review, and approval of each of the key project document.

Finding C: Building Turnover Procedures Were Not Followed

OBO failed to follow established procedures and best practices in planning for the buildings' turnover from OBO/CFSM/CM to the Senior Facility Manager in Kabul. OBO's Guide to Excellence in Diplomatic Facilities states that OBO encourages posts to have Facility Management staff

[40] Because of the length of some of the templates that OBO provided, it is infeasible to include them in the final draft of this report. OIG will provide these documents upon request.

observe construction at various stages in order to become familiar with the new systems. The OBO Project Director, however, limited the extent to which Facility Management personnel had access to the NOX and SDA-1 prior to substantial completion. Additionally, a number of required O&M deliverables were not provided at substantial completion, as required by OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities. As a result, Facility Management personnel were not fully prepared to assume O&M of the NOX and SDA-1 at the time of substantial completion and occupancy.

Facility Management Personnel Had Limited Access to the NOX and SDA-1 Prior to Substantial Completion

The Importance of Collaboration between the OBO Project Director and Facility Manager

OBO requires that its project directors and facility managers work closely together in order to facilitate a smooth transition to occupancy and to ensure that Facility Management personnel are prepared to operate and maintain the newly constructed facility. According to OBO's Construction and Commissioning Guidelines, this requires the OBO Project Director and post Facility Manager at a given project site to maintain continuous and detailed coordination on the building turnover process, typically starting about 9 months before substantial completion. Before substantial completion, O&M staff should be provided with opportunities to become familiar with new facilities, including the building systems and equipment that they will be required to operate and maintain. Specifically, OBO's Guide to Excellence in Diplomatic Facilities encourages posts to have Facility Management staff observe construction at various stages in order to become familiar with the new systems. OBO's Construction and Commissioning Guidelines also state that the OBO Project Director "will use the Facility Manager and key operation and maintenance staff as additional support during the Project Director's quality assurance efforts, working with the commissioning team in validating the contractor's proper installation, startup, and functional testing of equipment and systems." According to OBO, this is also a critical part of training O&M staff.

What OIG Found

The OBO Project Director and Construction Manager, who controlled access to the buildings during construction, limited the extent to which Facility Management personnel had access to the NOX and SDA-1 prior to substantial completion. According to Facility Management personnel, they were only able to access the NOX on a limited basis when escorted by OBO/CFSM/CM staff, and they were unable to inspect or familiarize themselves with the building's systems and equipment. Furthermore, although OBO's Construction and Commissioning Guidelines state that OBO Project Directors should use Facility Management personnel and key O&M staff as additional support during the Project Director's quality assurance efforts, the OBO Construction Manager told the Commissioning Agent that he would allow facility staff to observe her conducting testing in the NOX, but that they could not comment on any quality assurance issues they observed when walking through the facilities. Facility Management

personnel told OIG that they had improved, although still limited, access to SDA-1 before the building was declared substantially complete.

Why this Occurred

As with the incomplete commissioning process, the limitations on access occurred because of disagreements within OBO regarding the appropriate role of Facility Management personnel.

According to OBO/CFSM/CM officials, Facility Management personnel's access to both the NOX and SDA-1 was limited because, in their view, the staff were interfering with the building contractors and slowing down the construction and commissioning process. However, several facility managers in Kabul reported that the OBO Project Director and Construction Manager only began limiting Facility Management staff's access to the NOX after they identified a number of defects during routine walk-throughs of the building. During initial inspections, Facility Management personnel expressed concerns that the NOX was not ready for substantial completion and that many of the identified deficiencies would ultimately have to be addressed by O&M staff after substantial completion and occupancy. When they brought the issues to the attention of OBO/CFSM/CM, the OBO Project Director and Construction Manager dismissed the findings, stating they were outside the scope of Facility Management's jurisdiction. Although quality assurance oversight is not strictly within Facility Management's area of direct responsibility, OBO's Construction and Commissioning Guidelines encourage the Project Director to use the Facility Manager and key operation and maintenance staff as additional support during quality assurance efforts. Furthermore, OBO's Guide to Excellence in Diplomatic Facilities states that communication among all parties involved in a facility's planning, design, construction, operations, and maintenance strengthens the coordination of the design, reduces conflicts between building systems, minimizes cost overruns, and ensures that all stakeholders' needs are addressed.

Facility Management personnel also told OIG that they were not allowed to see the NOX punch list detailing the remaining unfinished items to be addressed by the contractor prior to final acceptance. According to one facility manager, the OBO Project Director stated that the punch list was not shared with Facility Management staff because it was "contractually sensitive." The OBO Project Director expressed his belief that Facility Management personnel were overstepping their bounds by commenting on deficiencies they identified during routine walk-throughs of the buildings. As a result, he reasoned that any tools used to facilitate communication between OBO and Caddell (such as the punch list) were not within Facility Management's jurisdiction.

As was also the case with respect to the incomplete commissioning process, Facility Management personnel stated that disagreements between OBO/CFSM/CM and Facility Management staff are not uncommon. One facility manager who has experience working on new OBO construction projects at other posts noted that the lack of coordination between OBO/CFSM/CM and Facility Management personnel is not unique to Kabul. He stated that facility managers are often not provided with the tools they need to adequately prepare for O&M of a new facility until after substantial completion. Although not formalized in OBO guidance, he stated that, several months before substantial completion, Facility Management personnel should be

given access to the new building, provided with a regularly updated punch list, and given a list of the building equipment and systems to be maintained, in order to ensure that they are prepared to assume O&M of the new building.

The Consequence of Ineffective Collaboration

Because the OBO Project Director limited Facility Management staff's access to the NOX and SDA-1, Facility Management personnel were not adequately prepared to accept responsibility for O&M of either building at substantial completion. Furthermore, Facility Management personnel and O&M support staff were prevented from supporting quality assurance efforts as prescribed in OBO's Construction and Commissioning Guidelines. OIG previously reported that the lack of quality assurance oversight during key phases of the project contributed to many of the identified deficiencies in the NOX and SDA-1.[41] Multiple project stakeholders involved in the embassy's construction and commissioning process observed that the NOX and SDA-1 were built without sufficient OBO/CFSM/CM quality assurance oversight and that, in some cases, problems were not identified until after the buildings were completed and turned over to the Facilities Management Office for preventive and emergency maintenance. OIG reported that the insufficient quality assurance process may ultimately result in the need for significant repairs or replacement of equipment as well as a shortened life cycle of some building systems. The costs of these problems will likely be borne by the Department and ultimately the U.S. taxpayer. In some cases, the deficiencies may also result in potential health or safety hazards, depending on the severity of the failure.

Operations and Maintenance Deliverables Were Not Provided at Substantial Completion

The Importance of Operations and Maintenance Deliverables

According to OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities, a number of O&M deliverables, such as system and equipment manuals, as-built drawings, and warranty information, should be provided to the post Facility Manager at or before substantial completion. These deliverables help to ensure that Facility Management personnel are ready to assume O&M of a new building. The OBO Project Director and Facility Manager must certify these deliverables were provided by signing off on an O&M turnover checklist either simultaneous with or before substantial completion.

What OIG Found

OIG found a number of key O&M deliverables were not provided to the Senior Kabul Facility Manager when the OBO Project Director declared the NOX and SDA-1 substantially complete. At the time the NOX was declared substantially complete on June 23, 2015, the OBO Project Director had provided only 2 of 10 (20 percent) mandated items to the Kabul Facility Manager. With respect to SDA-1, 7 of 10 (70 percent) mandated items were provided at the time substantial completion was declared on January 17, 2016. Additionally, the final O&M checklist for the NOX

[41] *Management Assistance Report: Building Deficiencies Identified at U.S. Embassy Kabul, Afghanistan Need Prompt Attention* (AUD-MERO-17-44, June 2017).

was not signed until November 2015, 5 months after the declaration of substantial completion. Table 2 shows the status of key O&M deliverables at the time of substantial completion of the NOX and SDA-1.

Table 2: Status of O&M Deliverables at Substantial Completion

	O&M Deliverable	Provided at Substantial Completion (NOX)	Provided at Substantial Completion (SDA-1)
1	As-Built Drawings	☒	☒
2	Detailed Inventory of the Facilities, Equipment, and Systems To Be Maintained	☒	☑
3	Maintenance Plan for All Building Systems and Equipment	☒	☑
4	Computerized Maintenance Plan Loaded Into Work Orders for Windows	☑	☑
5	Inventory of Recommended Spare Parts and Specialty Tools for All Building Systems and Equipment[a]	☒	☒
6	Technical Library with O&M Manuals for Building Systems, Equipment, and Architectural Products and Finishes	☒	☑
7	Items 1 through 6 above on DVD[b]	☒	☒
8	Warranty Information for All Systems and Equipment	☒	☑
9	General Contractor Has Assigned Cleared American Warranty Manager	☑	☑
10	General Contractor Has, via Contractual O&M Training, Familiarized Facility Manager and the Staff With All Installed Equipment, Operation, Maintenance, and Repair Services	☒	☑

☒ = Incomplete

☑ = Complete

[a] Inventory of Spare Parts for SDA-1 is marked as complete, but it is noted that the turnover of materials is pending, because not all spare parts are on site.

[b] O&M Library and Plan for SDA-1 are marked as provided, with the exception of As-Builts and Spare Parts.

Source: OIG generated from O&M checklists provided by OBO.

Why this Occurred

According to OBO officials, because all the buildings included in the Kabul construction project are part of a single, overall contract with an estimated completion date of March 2019, a number of the items on the O&M turnover checklist are not due until the end of the project. For example, according to the OBO Project Director, Caddell is not required to provide as-built drawings until the end of the entire project.

The Consequence of Not Providing Operations and Maintenance Deliverables

OBO's decision not to structure the contract to require that all O&M deliverables be provided at the time that each building was declared substantially complete hindered the ability of Facility Management personnel to adequately prepare to accept responsibility for O&M of the NOX and SDA-1. For example, according to one facility manager, without having access to as-built drawings at the time that each building is completed, Facility Management staff are limited in their ability to perform routine maintenance and to respond to emergencies. In large buildings like the NOX and SDA-1, many pieces of electrical and mechanical equipment require routine maintenance. Without a complete set of as-built drawings, it is difficult to know exactly where the equipment or critical components are located. This could present problems during an emergency when O&M staff would need to quickly locate a water valve or electrical line that must be shut off. In its own mandated assessment of SDA-1, completed 1 month after occupancy, PAE, the embassy's primary O&M contractor, also noted that it had not received any approved prints or as-built drawings for the building. Without these materials, PAE reported that it could only assess items that could be visually identified and tested.

The Commissioning Agent also noted the harmful effects of the missing O&M deliverables following occupancy of the NOX, stating that she believed the omissions adversely affected the safety and mission of the post. The Commissioning Agent noted that, following occupancy of the NOX, Facility Management personnel were using Issued-for-Construction drawings instead of As-Built drawings. Issued-for-Construction drawings are prepared during the design phase of the project and are used by the contractor to construct the facility. As-Built drawings, however, have been revised to reflect any and all changes to the project that were executed in the course of construction. In Kabul, more than 400 changes were made to the Issued-for-Construction drawings during construction, but Facility Management personnel were not provided documents reflecting those changes at substantial completion. The Commissioning Agent also noted that one of the chilled water pumps had a leaking seal and was out of service at the time she issued her report in August 2015. Although spare parts are one of the O&M deliverables required at the time of substantial completion, 1 month after occupancy of the NOX, no spare parts were available onsite to repair the pump. According to the contract specifications, the contractor is required to furnish one mechanical seal as part of the extra materials to be provided for each hydronic pump.[42] However, according to the Commissioning Agent, no seal was provided as part of the spare parts and, as a result, Facility Management personnel were unable to make the necessary repair.

According to OBO's Guide to Excellence in Diplomatic Facilities, contractor-provided training is another key element of the building turnover process and is also one of the O&M deliverables to be provided at or before substantial completion. Training should be conducted in person to provide hands-on experience with the new equipment at specific facilities. Typically, on average, 20 to 30 sessions cover equipment (which includes everything from generators to chillers). The OBO Project Director coordinates with the Facility Manager to ensure that appropriate staff members are available for this contract-required training and that the contractor has conducted

[42] Requirements for hydronic pumps are defined under Division 15 of the contract specifications. Section 15185, "Hydronic Pumps," Part 1.7A (Extra Materials) states that one mechanical seal for each pump shall be furnished.

the O&M training for new and renovated systems as part of the milestones required for substantial completion. However, in the case of the NOX, training was not completed until September 9, 2015, more than 2 months after substantial completion was declared. Furthermore, according to the Commissioning Agent, Caddell officials stated that, because they had already completed training required for O&M turnover for the NOX, they did not have to do it again for SDA-1. Because the NOX and SDA-1 were added to Caddell's existing contract as a modification without separate and distinct required completion dates for each facility, separate training sessions are not required for each building. According to the OBO Project Director, the sequencing and early completion of each of the buildings is for the convenience of the U.S. Government and is not required under the terms of the contract. However, the Commissioning Agent stated that she believes that OBO should have required Caddell to complete required training for each individual building. Because SDA-1 is a residential facility and the NOX is an office building, each facility has unique features that require a different approach to the type of training sessions provided.

A building cannot be expected to operate optimally if the personnel in charge of operating and maintaining the building systems are unfamiliar with how to service equipment and do not fully understand how the systems operate. O&M represents the greatest expense in owning and operating a facility during its life cycle. The failure of OBO/CFSM/CM to follow established guidance and to constructively work with facility managers hindered the ability of Facility Management personnel to prepare to assume O&M of the NOX and SDA-1 at the time of substantial completion and occupancy. Furthermore, without a phased O&M turnover process that requires the contractor to provide all O&M deliverables at the completion of each building, Facility Management staff and O&M contractors may not have access to key information that enables them to effectively operate and maintain each facility.

Recommendation 8: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to require its project directors and facility managers to establish a memorandum of agreement 9 months prior to the estimated substantial completion target date to facilitate the building turnover process. This memorandum of agreement should, at a minimum, (a) define the type of access that Facility Management personnel and operations and management contractors should be given to new buildings prior to substantial completion; (b) specify relevant documentation, such as punch lists, lists of equipment to be maintained, and commissioning documentation that should be provided to facility managers and operations and management contractors; and (c) establish timelines for providing building access and documentation to facility personnel and operations and management contractors prior to substantial completion and occupancy.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation." OBO stated that it has created a new position—a full-time Operations and Maintenance Transition Coordinator (OMTC)—will "facilitate the type of access, documentation, project participation, and deliverables envisioned in the recommendation."

OIG Reply: Although OBO did not concur with the recommendation, the actions taken to establish a full-time Operations and Maintenance Transition Coordinator meet the intent of the recommendation. OIG therefore considers this recommendation resolved pending further action and will closely monitor its implementation during the audit compliance follow-up process.

As discussed in this report, the OBO Project Director limited the extent to which Facility Management personnel had access to the NOX and SDA-1, and a number of required O&M deliverables were not provided at substantial completion. As a result, Facility Management personnel were not fully prepared to assume O&M of the NOX and SDA-1 at the time of substantial completion and occupancy. In its response to Recommendation 1, OBO describes the Operations and Maintenance Transition Coordinator as an individual who will attempt to address these concerns by focusing on the "smooth transition" from construction to the O&M phase; OBO represented that this individual will coordinate activities between quality assurance staff, the commissioning agent, and post Facility Management staff. The response also stated that this individual will reside at post. In short, based on OBO's description, establishing a full-time Operations and Maintenance Transition Coordinator, who will facilitate access, documentation, project participation and project deliverables, is an acceptable alternative action that OIG will monitor closely during the audit compliance follow-up process.

This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has outlined the responsibilities of the OMTC and has established written procedures that the OMTC will be required to follow including a) defining the type of access that Facility Management personnel and O&M contractors should be given to new buildings prior to substantial completion; (b) specifying relevant documentation, such as punch lists, lists of equipment to be maintained, and commissioning documentation that should be provided to facility managers and O&M contractors; and (c) establishing timelines for providing building access and documentation to facility personnel and O&M contractors prior to substantial completion and occupancy. Should the documentation not reflect the components set forth in the recommendation, however, OIG may redesignate this recommendation as "unresolved."

Recommendation 9: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to require its project directors and facility managers to hold a pre-turnover meeting approximately 60 days prior to substantial completion. The entire project team should be included in this meeting with participants discussing the status of construction, commissioning, required turnover documentation, and the planned schedule and outstanding actions required to ensure a smooth and successful turnover of facilities.

Management Response: OBO did not concur with the recommendation, stating that "the process in place far exceeds the intent of this recommendation." OBO added that as systems and buildings approach commissioning and substantial completion, the Project Director,

Facility Manager, and the Commissioning Agent "meet on an almost daily basis with the construction contractor and other relevant project stakeholders to discuss, among other things, the status of construction, commissioning, required turnover documentation, the planned schedule, and outstanding actions required to ensure a smooth and successful turnover of facilities."

OIG Reply: Because OBO did not concur with the recommendation and its stated actions do not fulfill the intent of the recommendation, OIG considers this recommendation unresolved.

OBO's response describes meetings that may occur but for which there is no established requirement. Moreover, although OBO stated that the Project Director, Facility Manager, and the Commissioning Agent meet on an "almost daily basis" as commissioning and substantial completion approaches, as described in this report, OIG found that the collaboration between the Project Director and Facility Management personnel was ineffective with regard to the NOX and SDA-1 turnover process. Specifically, Facility Management personnel had limited access to these buildings prior to turnover. According to these personnel, they were only able to access the NOX on a limited basis, and they were unable to inspect or familiarize themselves with the building's systems and equipment. The lack of effective collaboration resulted in Facility Management personnel being inadequately prepared to accept responsibility for operations and maintenance of either building.

This recommendation, particularly when viewed in light of other recommendations, addresses these flaws and increases effective collaboration by specifically requiring all stakeholders to attend a meeting where issues affecting substantial completion and turnover are discussed and actions taken to address problems (if any) are agreed upon.

This recommendation will be considered resolved when OBO agrees to implement it or provides an acceptable alternative that meets the intent of the recommendation, which is to increase collaboration and agreement on issues affecting substantial completion and turnover. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has required OBO project directors and facility managers to hold a pre-turnover meeting approximately 60 days prior to substantial completion.

Recommendation 10: OIG recommends that the Bureau of Overseas Buildings Operations develop requirements mandating the use of a phased approach for projects that involve the construction of multiple buildings or facilities. This approach should outline specific phasing requirements for each building or facility constructed, including separate and distinctive commissioning, substantial completion, turnover, and acceptance requirements. This approach should also include protocols for a phased operations and management turnover process, requiring the contractor to provide key operations and management deliverables at the completion of each building if multiple buildings or facilities are being constructed under a single Bureau of Overseas Buildings Operations construction contract.

Management Response: OBO did not concur with the recommendation, stating that "the process in place meets the intent of this recommendation." Nevertheless, OBO stated that

upcoming phased projects will feature expanded specifications addressing many of the concerns OIG noted, and that, "while somewhat new in 2009 when the Kabul contract was written, OBO now uses fairly sophisticated phasing plans for our phased projects." At the same time, OBO explained that "including separate and distinctive commissioning, substantial completion, turnover, and acceptance requirements has the potential of significantly extending overall project completion and occupancy." Among other things, OBO stated that a phased turnover process would require an already stretched Facility Management staff to maintain two mission compounds at the same time and separate certificates of occupancy for the phased turnover of facilities.

OIG Reply: Although OBO did not concur with the recommendation, OBO's expanded specifications and sophisticated phasing plans may fulfill the intent of the recommendation when implemented. That is, OIG construes OBO's "non-concurrence" to express disagreement with the need to develop new requirements to address this issue rather than disagreement with the need to address this issue in the first place. OIG therefore considers this recommendation resolved pending further action and will closely monitor its implementation during the audit compliance follow-up process. This recommendation will be closed when OIG receives and accepts documentation demonstrating that OBO has implemented expanded specifications and sophisticated phasing plans that ensure key steps are completed prior to substantial completion and agreed-upon project requirements are followed at each step of the construction process. Should the documentation not reflect the components set forth in the recommendation, however, OIG may redesignate this recommendation as "unresolved."

CONCLUSION

OBO's Guide to Excellence in Diplomatic Facilities notes that, as the single real property manager for the U.S. Government's diplomatic facilities overseas, OBO's portfolio spans 285 missions worldwide and houses more than 86,000 U.S. Government employees overseas. Since the start of OBO's Capital Security Construction program in 1999, the program has received $21 billion. OBO's Excellence Initiative emphasizes that embassies should represent the best in American design, engineering, and technology. Despite these goals, OBO's oversight of commissioning, substantial completion, and turnover of the NOX and SDA-1 was inconsistent with Department procedures and directives and highlights important areas for improvement. Both buildings are part of a major residential expansion at one of the Department's most critical posts. Although OIG recognizes that undertaking complex construction projects in a high-threat post such as Kabul presents challenges, it is essential also to reduce financial risk to both the Department and the U.S. taxpayer. It is also vital to meeting OBO's goals of supporting America's diplomats in achieving U.S. foreign policy objectives and to provide safe, secure, and functional places for them to work and live.

Without completing the commissioning process before substantial completion and specifically verifying that systems had been tested and commissioned pursuant to OBO's defined commissioning process and industry standards, OBO missed an important opportunity to ensure

that all building systems in the NOX and SDA-1 were designed, installed, and tested to operate and perform as intended. Furthermore, because OBO did not require the construction contractor and the Commissioning Agent to prepare and submit a number of key project documents for each building constructed, OBO was limited in its ability to determine whether all project requirements were fulfilled by the contractors prior to substantial completion and occupancy. Finally, OBO's failure to follow established guidance in planning for the buildings' turnover from construction management to the Senior Facility Manager meant that Facility Management personnel were not adequately prepared to accept responsibility for the O&M of the NOX and SDA-1. This failure is significant, as O&M represents the greatest expense in owning and operating a facility during its life cycle.

The decisions to accept the NOX and SDA-1 without fully completing the commissioning process and to limit the role of Facility Management personnel in the construction and commissioning process prior to substantial completion contributed to a number of ongoing deficiencies in both buildings. These decisions could require the Department to spend significant amounts of money over the long term because it may result in the need to carry out corrective actions as well as additional medium- and long-term maintenance, repairs, and replacement in response to shortened life cycles of building equipment and systems.

OIG previously reported a range of deficiencies affecting the NOX and SDA-1. These problems ranged from objectionable current that posed an immediate safety risk to pervasive plumbing issues that affected day-to-day usage of the buildings. (A summary of these concerns is set forth in Appendix C). Each report was issued on the basis of the immediacy of the problem and the potential threat to embassy residents in terms of life, health, and safety. OIG trusts that the recommendations offered in this report and previously issued products will assist the Department in taking meaningful steps to better manage OBO construction projects and protect embassy personnel overseas.

OIG is reporting these deficiencies in accordance with generally accepted government auditing standards and believes that the evidence obtained provides a reasonable basis for the findings and conclusions presented in this report.

RECOMMENDATIONS

Recommendation 1: OIG recommends that the Bureau of Overseas Buildings Operations issue a Construction Alert defining which building equipment and systems must be fully commissioned prior to substantial completion and update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to include those requirements.

Recommendation 2: OIG recommends the Bureau of Overseas Buildings Operations require project directors to certify that all required building equipment and systems are fully commissioned prior to issuing the certificate of substantial completion.

Recommendation 3: OIG recommends that the Bureau of Overseas Buildings Operations establish and implement internal controls to verify that all required documentation in support of commissioning testing is completed prior to substantial completion. This should include all pre-functional checks, functional performance tests, and integrated systems tests to ensure that building equipment and systems are functioning as intended.

Recommendation 4: OIG recommends that the Bureau of Overseas Buildings Operations move responsibility for oversight and management of commissioning agents from the Office of Construction Management to the Office of Facility Management. Specifically, the Office of Facility Management should oversee all aspects of the commissioning process, including (a) ensuring that commissioning agents have fulfilled the terms outlined in the statement of work; (b) verifying that all building systems are designed, installed, and tested to meet the Department's contract requirements; and (c) ensuring that commissioning of all major systems is done before the project is declared substantially complete.

Recommendation 5: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to include procedures for identifying and approving instances in which it is appropriate to issue the certificate of substantial completion before commissioning has been fully completed. Specifically, these protocols should include mechanisms that (a) require a formal waiver be issued by the construction executive to proceed with substantial completion and occupancy even though commissioning is not yet complete, (b) establish milestones for completing the commissioning process after substantial completion and occupancy, and (c) execute a contract modification requiring the contractor to grant an extended warranty for those systems that were not commissioned at the time of substantial completion.

Recommendation 6: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) as well as its Guide to Excellence in Diplomatic Facilities to ensure that references to the commencement of the warranty period are consistent with FAR 52.246-21, Warranty of Construction. Specifically, existing policies and procedures should be updated to indicate that the warranty period either begins at final acceptance unless the

Government takes possession of any part of the work before final acceptance, in which case, the warranty shall begin at the date the Government takes possession. The Bureau of Overseas Buildings Operations should also explicitly define when the Government officially takes possession of the completed work, including whether possession occurs at substantial completion or at the time of occupancy.

Recommendation 7: OIG recommends that the Bureau of Overseas Buildings Operations establish requirements in its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) for the preparation and submission of key project documents for newly constructed facilities, including (a) owner's project requirements, (b) a Basis of Design document, (c) systems manuals, (d) a commissioning plan, and (e) a final commissioning report. These documents should be prepared and submitted at the appropriate interval of construction for each building or facility constructed by the Bureau of Overseas Buildings Operations. Additionally, the requirements should indicate the parties responsible for preparation, review, and approval of each of the key project documents.

Recommendation 8: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to require its project directors and facility managers to establish a memorandum of agreement 9 months prior to the estimated substantial completion target date to facilitate the building turnover process. This memorandum of agreement should, at a minimum, (a) define the type of access that Facility Management personnel and operations and management contractors should be given to new buildings prior to substantial completion; (b) specify relevant documentation, such as punch lists, lists of equipment to be maintained, and commissioning documentation that should be provided to facility managers and operations and management contractors; and (c) establish timelines for providing building access and documentation to facility personnel and operations and management contractors prior to substantial completion and occupancy.

Recommendation 9: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to require its project directors and facility managers to hold a pre-turnover meeting approximately 60 days prior to substantial completion. The entire project team should be included in this meeting with participants discussing the status of construction, commissioning, required turnover documentation, and the planned schedule and outstanding actions required to ensure a smooth and successful turnover of facilities.

Recommendation 10: OIG recommends that the Bureau of Overseas Buildings Operations develop requirements mandating the use of a phased approach for projects that involve the construction of multiple buildings or facilities. This approach should outline specific phasing requirements for each building or facility constructed, including separate and distinctive commissioning, substantial completion, turnover, and acceptance requirements. This approach should also include protocols for a phased operations and management turnover process, requiring the contractor to provide key operations and management deliverables at the

completion of each building if multiple buildings or facilities are being constructed under a single Bureau of Overseas Buildings Operations construction contract.

APPENDIX A: PURPOSE, SCOPE, AND METHODOLOGY

The Department of State (Department), Office of Inspector General (OIG), Office of Audits, conducted this performance audit to determine whether the Bureau of Overseas Buildings Operations (OBO) followed Department policies, procedures, and directives governing the commissioning, substantial completion, and turnover of the New Office Annex (NOX) and Staff Diplomatic Apartment-1 (SDA-1) at the U.S. Embassy in Kabul, Afghanistan.

OIG conducted fieldwork for this audit from October 2015 to December 2016 at OBO in the Washington, DC, metropolitan area and at Embassy Kabul. OIG conducted this performance audit in accordance with generally accepted government auditing standards. These standards require that OIG plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the findings and conclusions based on the audit objective. OIG believes that the evidence obtained provides a reasonable basis for the findings and conclusions based on the audit objective.

To obtain background information for this audit, OIG researched and reviewed applicable Federal laws and regulations, as well as Department internal guidance. OIG consulted the Federal Acquisition Regulation, the Foreign Affairs Manual, the Foreign Affairs Handbook, and the Department of State Acquisition Regulation.

To obtain an understanding of OBO's approach to managing new construction projects, OIG reviewed relevant OBO documentation, such as OBO's Construction and Commissioning Guidelines, OBO's Policies and Procedures on the Commissioning and Transition to Occupancy of Overseas Facilities, and contractual documents specific to the Embassy Kabul construction project, including Division 1 of OBO's Standard Embassy Design, which prescribes the processes and procedures to be followed in carrying out a construction project. OIG interviewed officials within OBO, including officials within OBO's Construction Management and Facilities Divisions, regarding the management, oversight, and transition to occupancy of new construction projects at Embassy Kabul. To understand the responsibilities of the Bureau of Diplomatic Security (DS) with regard to ensuring that OBO-constructed buildings meet required security standards, OIG reviewed relevant DS protocols, interviewed DS officials, and reviewed memoranda and agreements specific to inspections conducted by DS in the NOX and SDA-1.

To understand the requirements of the construction and commissioning contracts, OIG obtained and reviewed the base contracts and modifications, statements of work, and other relevant contract documentation. OIG also obtained and reviewed a range of supporting project documentation, including trip reports generated by OBO Engineers, commissioning meeting minutes, construction punch lists, and quality control/quality assurance documentation. OIG also conducted interviews with representatives of Caddell Construction and PMA, the Commissioning Agent responsible for the NOX and SDA-1. OIG also conducted interviews with Post Facility Managers and Pacific Architects and Engineers, Inc., the primary contractor responsible for O&M at Embassy Kabul. OIG also reviewed industry best practices established by the American Society

of Heating, Refrigerating, and Air Conditioning Engineers, the National Institute of Building Sciences, and the U.S. Army Corps of Engineers (USACE), among others.

As part of the planned audit work, OIG executed an interagency agreement with USACE to provide licensed, professional Electricians and Mechanical Engineers to assist OIG auditors in evaluating whether the NOX and SDA-1 building facilities, components, and systems were constructed in accordance with contract specifications and international building code standards. The USACE team included Mechanical Engineers from USACE's Transatlantic Afghanistan District as well as USACE's Engineering and Construction Division. USACE also provided master electricians from Task Force Protect Our Warfighters and Electrical Resources (POWER).[1] OIG also collaborated with the USACE Engineering Research and Development Center's Construction Engineering Research Laboratory in Champaign, IL, to obtain technical analysis of the closed-loop (hydronic) heating and cooling water treatment system at Embassy Kabul. USACE Engineers conducted a site visit to the embassy in February 2016 and provided ongoing technical support, including an extensive review and analysis of project documentation conducted from February 2016 to December 2016.

Prior Reports

OIG issued a Management Alert in April 2016 that identified potential life, health, and safety issues as a result of objectionable electrical current detected in both the NOX and SDA-1 after substantial completion and occupancy. The Management Alert contained recommendations for OBO to identify and remediate the objectionable current and to inform embassy residents of the potential risk posed by objectionable current. In March 2017, OIG produced a Management Assistance Report that determined alterations had been made to several forced entry-ballistic resistant security doors in SDA-1 that may affect the overall security performance of the doors. OIG found that the improper alterations to the doors went unaddressed, in part, because the current security certification process does not include a follow-up inspection by DS to confirm OBO's actions to address that the physical security deficiencies identified were in accordance with physical security standards. In June 2017, OIG produced a Management Assistance Report that identified weaknesses in the quality assurance process that allowed a number of building deficiencies to go unaddressed during the construction and commissioning process. Working in collaboration with USACE, OIG identified a number of ongoing deficiencies throughout the NOX and SDA-1 that, if uncorrected, will have long-term implications for the effectiveness and efficiency of equipment and systems in both buildings. The deficiencies identified affect plumbing and electrical systems, HVAC systems, elevators, and fire-safety systems.

OIG also reviewed prior GAO and OIG audit and inspection reports to identify information previously reported relating to OBO construction projects and specifically to OBO's work in Kabul.

[1] Task Force POWER in Afghanistan was created by Congress in response to the deaths of U.S. personnel in Iraq from electrocution, as well as injuries to others from shock. Its mission is to identify and correct electrical issues at all military facilities in Afghanistan.

Work Related to Internal Controls

OIG performed steps to assess the adequacy of internal controls related to the areas audited. For example, OIG gained an understanding of the Department's processes for monitoring OBO embassy construction projects. OIG reviewed guidance, such as the relevant contract documentation and modifications; the Foreign Affairs Manual; the Foreign Affairs Handbook; and other Department policies, procedures, and directives to determine its findings. OIG's findings and conclusions are presented in the Audit Results section of this report.

Use of Computer-Processed Data

In the course of this audit, OIG reviewed hard-copy, electronic, and computer-processed data provided by OBO and DS. However, the computer-processed data reviewed were not used to support the findings or conclusions presented in this report. Therefore, OIG did not assess the controls or validate the accuracy of the computer-processed data reviewed.

APPENDIX B: COMMISSIONING STATUS OF BUILDING SYSTEMS AT TIME OF DECLARATION OF SUBSTANTIAL COMPLETION

Table B.1 identifies the building systems in the New Office Annex (NOX) and Staff Diplomatic Apartment-1 (SDA-1) that were commissioned prior to the declaration of substantial completion.

Table B.1: Commissioning Status of All Building Systems at Substantial Completion

☒ = System not fully commissioned at substantial completion.
☑ = System 100-percent commissioned at substantial completion.
N/A = System not applicable to the building in question.

System	NOX	SDA-1
Water Distribution and Treatment	N/A	☒
Fuel Storage Tanks, Piping and Distribution	☑	☒
Subdrainage	N/A	☑
Storm Sewerage	N/A	☑
Forced Entry/Ballistic Resistant Door Assemblies	☑	☑
Forced Entry/Ballistic Resistant Roof Hatches	☑	N/A
Coiling Doors	☑	☑
Exterior Security Windows	☑	☑
Automatic Queuing system	☑	N/A
Projection Screens	☑	☑
Waste Compactors	N/A	☑
Potable Water Pumps	N/A	☒
Water Treatment for Fire Water Storage Tanks	☒	☒
Submersible Pump Stations	N/A	☑
Food Service Equipment	☒	☒
Residential Appliances	☑	☑
Food Service Exhaust	☒	N/A
Fire Pump Assemblies	☑	☑
Elevators	☒	☒
Trash Chutes	N/A	☑
Motors	☑	☑
Mechanical Vibration Controls and Seismic Supports	☑	☑
Equipment Insulation	☑	☑

System	NOX	SDA-1
Pipe Insulation	☑	☑
Domestic Water Piping	☑	☑
Sanitary Waste and Vent Piping	☑	☑
Storm Drainage Piping	☑	☑
Hydronic Piping	☑	☑
Hydronic Pumps	☒	☒
Plumbing Fixtures	☑	☑
Emergency Plumbing Fixtures	☑	☑
Water Coolers	☑	☑
Plumbing Specialties	☑	☑
Electric Humidifiers	☑	N/A
Packaged Booster Pumps	N/A	☑
Sewage Pumps	☑	☑
Sump Pumps	☑	☑
HVAC Water Treatment	☒	☒
Domestic Water Heaters and Pumps (Solar)	N/A	☒
Breechings, Chimneys, Stacks, and Vents	☒	☒
Dedicated Heat Recovery Chillers	☒	☑
Modular Air Cooled Water Chillers	☒	☑
Air Handling Units	☑	☑
Split System AC Units	☑	☑
Electric Heating Coil	N/A	☒
Propeller Unit Heater	☑	☑
Electric Heating Cables	☑	☑
Plate Heat Exchangers	☑	N/A
Metal Ducts	☑	☑
Duct Accessories	☑	☑
Power Ventilators (Toilet)	☑	☒
Air Terminal Units	☑	☑
Diffusers, Registers and Grilles	☑	☑
Air Filters	☑	☑
Water Tube Boilers	☒	☑
Hot Water Heating System (Commercial Kitchen)	☑	☒
Hot Water Heating System	☑	☑

System	NOX	SDA-1
Modular Air Cooled Water Chillers	☒	☑
Power Ventilators RMS	☒	☑
Overcurrent Protective Device Coordination	N/A	☑
Lighting Control Devices	☑	☑
Fin Tube Radiant Heater	☒	☑
Electric Heating Coil	N/A	☑
Fan Coil Units	☒	☑
Electrical Power Monitoring and Control	☒	☒
HVAC Instrumentation and Controls	☒	☑
Generator Sets	☑	☑
Variable Frequency Controllers	☑	☑
Medium Voltage Transformers	☑	☑
Voltage Regulators for TSS	☑	N/A
Transfer Switches	☑	☑
Generator Sets – Emergency	☒	☒
Switchgear	☑	☑
Switchboards	☑	☑
Panelboards	☑	☑
Fuses	☑	☑
Interior Lighting	☑	☑
Exterior Lighting	☑	☑
Dimming Controls	☑	☑
Grounding and Bonding	☒	☑

APPENDIX C: PREVIOUSLY IDENTIFIED DEFICIENCIES AFFECTING THE NOX AND SDA-1

OIG previously issued three reports addressing specific problems in the New Office Annex (NOX) and Staff Diplomatic Apartment-1 (SDA-1). These problems are summarized below, along with information regarding the Department of State's (Department) response to the Office of Inspector General's (OIG) recommendations.

Objectionable Current

In April 2016, OIG issued a Management Alert that identified life, health, and safety issues related to the presence of hazardous electrical current in the two buildings.[2] Objectionable current is electrical current occurring on the grounding wiring of a building, and it is most commonly caused by improperly installed electrical wiring and equipment and faulty electrical appliances. Inspections conducted by U.S. Army Corps of Engineers (USACE) in February 2016, which included master electricians from Task Force Protect Our Warfighters and Electrical Resources (POWER), discovered objectionable currents measuring up to 16.7 amps in the NOX and up to 27 amps in SDA-1. Section 250.6 of the National Electrical Code states that to prevent a fire, electric shock, or improper operation of equipment, electrical systems and equipment must be installed in a manner that prevents "objectionable current" from flowing on metal parts. Although the National Electrical Code does not establish a life-safety threshold for objectionable current, Task Force POWER considers any objectionable current a risk to life and safety. In response to OIG's Management Alert, the Bureau of Overseas Buildings Operations (OBO) deployed a team from its International Maintenance Assistance Program to perform corrective maintenance on the grounding and bonding systems in the NOX and SDA-1. The team concluded that the systems in both the NOX and SDA-1 had not been installed as designed, and this was contributing to the high levels of objectionable current. OBO disagreed with OIG's findings regarding a life-health-safety issue but took actions to remediate the objectionable current. Following OBO's corrective actions, objectionable current levels were significantly reduced. As of November 2017, all recommendations included in the original Management Alert have been closed.

[2] *Management Alert: Hazardous Electrical Current in Office and Residential Buildings Presents Life, Health, and Safety Risks at U.S. Embassy Kabul, Afghanistan* (AUD-MERO-16-01, April 2016).

Figure 2: Objectionable Current Reading in NOX Basement Switchgear Room.
Source: OIG photo taken February 14, 2016.

Security Certification Process

In March 2017, OIG reported that two security doors in SDA-1 were improperly altered and that weaknesses in the security certification process allowed the improper alterations to go unaddressed for more than a year.[3] Specifically, OIG found that the forced entry locks on two sets of security doors in SDA-1 had been improperly altered to make the doors functional. These alterations were not permitted by the construction contract and did not meet physical security standards. However, 1 year after substantial completion of SDA-1 (January 2016), the altered components of the doors still had not been replaced. Figure 3 shows one of the ground-down strike plates associated with a security door in SDA-1.

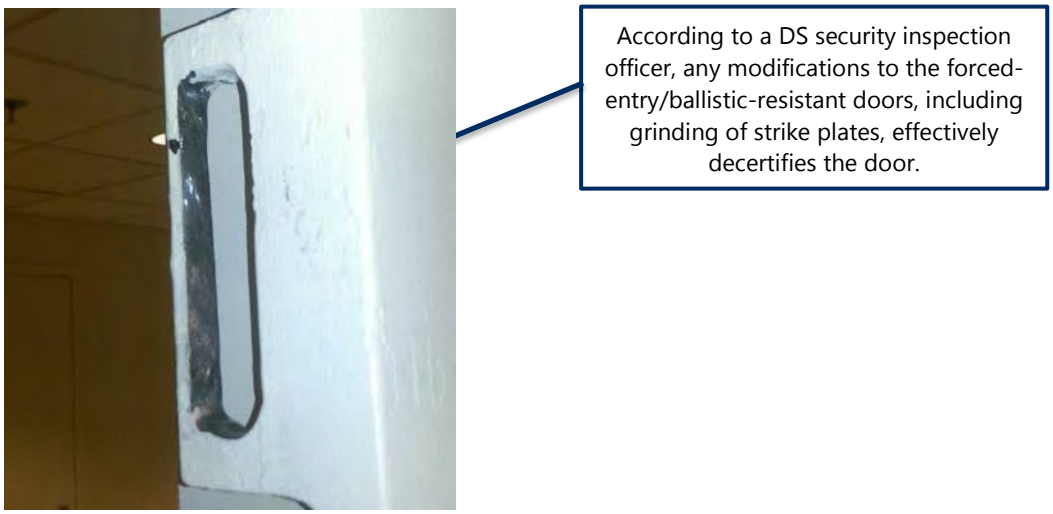


Figure 3: Example of a Ground-Down Strike Plate to a Security Door in SDA-1.
Source: OIG photo taken December 6, 2016.

[3] *Management Assistance Report: Improvements Needed to the Security Certification Process to Ensure Compliance with Standards at Embassy Kabul, Afghanistan* (AUD-MERO-17-28, March 2017).

The improper alterations to the doors went unaddressed, in part, because the current security certification process does not require a final follow-up inspection by DS to confirm that OBO took adequate actions to address identified physical security deficiencies. OIG recommended that OBO replace the altered components of these doors in accordance with the contract because these security doors are not only used to protect personnel but, at Embassy Kabul, are also used to protect essential and sensitive equipment such as communications equipment, generators, and electrical switchgear. In addition, OIG recommended that the physical security certification process be revised to include a follow-up inspection by DS to reduce the risk that physical security deficiencies remain after OBO certifies Department buildings for occupancy. OIG made two recommendations to OBO to address the altered components to the security doors and to improve the security certification process. OBO concurred with the recommendation to replace the altered door components and notified Caddell that the deficiency should be corrected. As of November 2017, OBO reported that they have replaced the altered component to the doors. However, OBO did not concur with OIG's recommendation to revise the security certification process, and as a result, this recommendation remains unresolved.

Ongoing Building Deficiencies

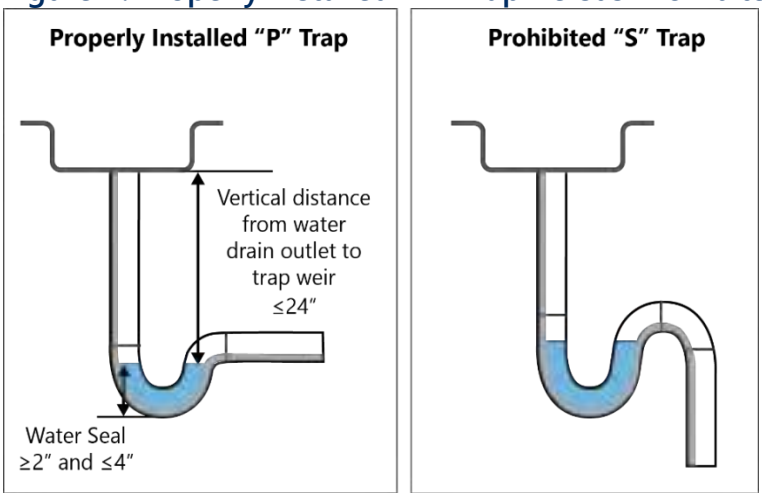
In June 2017, OIG, in collaboration with USACE, identified a number of ongoing building deficiencies in the NOX and SDA-1 that affect major building equipment and systems, including plumbing, electrical systems, HVAC systems, fire-safety systems, and elevators.[4] OIG found that the lack of quality assurance oversight during key phases of the project contributed to deficiencies in both buildings.

Plumbing Systems

OIG found that the plumbing system in SDA-1 was not installed in accordance with the terms of the construction contract or the International Plumbing Code. As a result, SDA-1 is experiencing slow and backed-up drains throughout the building. Following substantial completion and occupancy, three master plumbers from PAE reviewed the integrity of the building's plumbing systems and found that incorrect water-seal traps had been installed beneath fixtures in SDA-1. Specifically, they found that the contractor had installed "S" traps, rather than the contractually required "P" traps, throughout the building (see Figure 4). The purpose of a trap is to prevent sewer gases, and possibly vermin, from coming into the building. When water sits in the trap, sewer gases stay out. The "S" traps that were used in SDA-1 do not accomplish this goal. The International Plumbing Code (Chapter 10, Section 1002.3) prohibits the use of "S" traps because they are not properly vented. In the course of assessing the plumbing deficiencies in SDA-1, OBO concluded that "failure in quality control is evident" and that the current as-built condition is not compliant and is unacceptable to OBO. OBO stated that plumbing deficiencies in SDA-1 will be addressed in 2017.

[4] *Management Assistance Report: Building Deficiencies Identified at U.S. Embassy Kabul, Afghanistan Need Prompt Attention* (AUD-MERO-17-44, June 2017).

Figure 4: Properly Installed "P" Trap Versus Prohibited "S" Trap



Source: Figure provided by PAE Consultants on August 7, 2016.

Electrical Systems

In addition to finding objectionable current, Task Force POWER identified a number of other National Electrical Code violations in the NOX and SDA-1. These deficiencies were attributed to poor workmanship and the installation of incorrect electrical materials throughout both buildings. According to Task Force POWER, left unresolved, many of these deficiencies could worsen over time and damage electrical systems and equipment. In some cases, the deficiencies may also result in potential health or safety hazards, depending on the severity of the failure. Figure 5 shows an unattended plugged-in device without a waterproof enclosure.

Figure 5: Unattended, Plugged-in Device Without a Waterproof Enclosure in SDA-1.
Source: Photo taken by Task Force POWER on February 22, 2016, and verified by OIG on November 1, 2016.

HVAC Systems

USACE observed and documented a range of Heating, Ventilation, and Air Conditioning (HVAC) deficiencies, including improper monitoring and maintenance of the closed-loop hydronic water system and poor workmanship affecting the installation of HVAC systems in both the NOX and

SDA-1. Many of these deficiencies can affect the efficiency of HVAC systems and, in some cases, may damage equipment over the long term.

Fire Safety Systems

OIG found numerous smoke detectors that cannot be accessed for maintenance. According to OBO's Policies and Procedures Directive on the Commissioning and Transition to Occupancy of Overseas Facilities, final testing and commissioning of fire alarm and detection systems must be performed according to the National Fire Protection Association (NFPA 72) and associated codes.[5] NFPA 72 17.4.4 states that smoke detectors should "be installed in a manner that provides accessibility for periodic inspection, testing, and maintenance." During an inspection of SDA-1 conducted in December 2015, the Director of OBO's Office of Fire Protection required that those smoke detectors he found to be inaccessible be relocated. However, in February 2016, following substantial completion and occupancy of both the NOX and SDA-1, USACE mechanical engineers identified additional smoke detectors in the mechanical rooms of both buildings that were blocked by HVAC and electrical equipment and thus were inaccessible for maintenance. One year later, in February 2017, OIG also observed a number of smoke detectors in mechanical rooms in the NOX that had not been relocated and remained inaccessible for maintenance. PAE estimated that approximately 10 to 15 smoke detectors in the NOX do not comply with NFPA 72 because they are inaccessible for maintenance. Figure 6 shows inaccessible smoke detectors in the NOX.

Figure 6: Smoke Detectors in the NOX Inaccessible for Testing and Maintenance.
Source: Photo on left shows a smoke detector in 7th floor maintenance room of the NOX. Photo taken by USACE, February 2016. Photo on right shows smoke detector in maintenance room in the basement of the NOX. Photo taken by OIG, January 2017.

OIG made 19 recommendations to OBO to address the deficiencies identified in our June 2017 report. On the basis of OBO's planned actions, OIG considers all 19 recommendations resolved pending further action.

[5] The Bureau of Overseas Buildings Operations, Policy and Procedures Directive (P&PD CM 01), "Commissioning and Transition to Occupancy of Overseas Facilities," February 20, 2013.

APPENDIX D: BUREAU OF OVERSEAS BUILDINGS OPERATIONS RESPONSE

United States Department of State
Washington, D.C. 20520

UNCLASSIFIED

MEMORANDUM FOR NORMAN BROWN – OIG/AUD

FROM: OBO/RM – Jürg Hochuli /s/

SUBJECT: Audit of Bureau of Overseas Buildings Operations' Oversight of New Construction Projects at the U.S. Embassy in Kabul, Afghanistan, AUD-MERO-18-XX, November 2017

As requested, attached is the Bureau of Overseas Buildings Operations' response to recommendation numbers one through 10.

Attachment:
As stated.

UNCLASSIFIED

Office of Inspector General
Audit of Bureau of Overseas Buildings Operations' Oversight of New Construction Projects at the U.S. Embassy in Kabul, Afghanistan
Report No. AUD-MERO-18-XX, November 2017

OBO General Comments

OBO would like to emphasize that the entire OIG audit of the Kabul construction project, beginning in 2015, was conducted during an active construction project in an unstable region. Given the nature of this project, it should not be a basis for changing policies and procedures worldwide.

OBO now prioritizes commissioning to ensure that newly completed facilities are in accordance with site-specific commissioning plans and procedures. The OIG began its audit in 2015; OBO began steps at approximately the same time to improve the commissioning and hand-off processes with the fundamental goal of ensuring Fire and Life Safety, and Physical and Technical Security for our diplomats and staff working overseas.

Rather than using one part of a single project to conclude OBO has systematic construction management problems worldwide, we request that, prior to finalizing this report, the OIG review other projects, such as the NOBX in Kabul or any of our projects currently in the Commissioning phase, such as Nouakchott, The Hague, Dushanbe, Islamabad, or Amman to gain a comprehensive view of current management practices, which would better inform any recommendations for changes.

OBO Request for Corrections

1. OBO requests that Tables 1 and 2 in the OIG report be removed from the final report. There are more accurate ways to depict project status at the time of substantial completion, such as including the percentage of functional test reports that were completed at the time of occupancy.
    - For example, OIG's table shows the hydronic pumps as "not fully commissioned" at substantial completion. This is incorrect per attachment 3, which shows all systems being completed for this particular item prior to occupancy in June 2015. One component of the pump, the inertial base, which is not critical for occupancy, was completed later; and the commissioning agent signed off on the system during the scheduled visit in December 2015.

2. The OIG incorrectly believes that the project's commissioning status at substantial completion "contributed to a range of building deficiencies after occupancy." OBO has conducted a number of senior level reviews of the SDA-1 and NOX completion, confirming that there are no issues out of the ordinary for large building projects of their type. OBO Facilities Management is currently tracking fewer than normal maintenance calls for the SDA-1 and NOX buildings, compared to the number of occupants.

3. The disagreements between the commissioning agent and Project Director (PD) should be removed from the report.

    - Disagreements between parties should not be used as a primary resource in determining the root cause of an issue or a process, such as the commissioning process.

4. OBO requests removal of Appendix C of this report in its entirety. Appendix C mentions previously issued IG reports on Kabul that have been or are being addressed.

    - For example, the objectionable current issue is mentioned in the report whereas OIG has closed the recommendations pertaining to OBO. The OIG closed these recommendations based on OBO's remedial actions and statements in response to the recommendations, along with OBO's representation that voltage is not present to drive the objectionable current in the NOX and SDA-1, thereby mitigating risk to occupants.

5. Regarding the report from the commissioning agent to the facilities personnel in August 2015 on the status of the NOX, OBO wishes to clarify that none of the items listed below are critical and certainly not more critical than life-safety:

    a. "Chillers were not fully operational." This statement is incorrect. The NOX Multistack Chillers were operational at substantial completion in June 2015. The Multistack certified factory representative had performed full start-up procedures for all modules, and the chiller had been fully commissioned as of June 13, 2015 (See Attachment No. 1).

    b. "Boilers were not operational." This statement is incorrect. The boilers were operational and fully commissioned at substantial completion, and the Bryan Boiler Factory representative had performed full start-up procedures (See Attachment No. 2).

    c. "One of the fan coil units was not operational." This statement is incorrect. The EC room fan coil unit was functional and cooling.

    d. "Chilled hydronic water secondary pumps were not operating correctly." This statement is incorrect. The chilled water pumps were fully commissioned and operating correctly (See Attachment No. 3).

    e. "Power monitoring system was not operational." This statement is misleading. Due to the complexities of the multi-phased Kabul construction project, the power monitoring system was dependent upon completion of the East Compound Utility Building (Power Plant), which was completed in October 2015.

    f. "Correct domestic water booster pumps had not yet been installed." This statement is incorrect. There was no contract requirement for a domestic water booster pump. A domestic water booster pump was installed as a result of a new situation involving the West Compound Containerized Housing Units. At no additional cost to the U.S.

government via change order, Caddell installed a final booster pump in the NOX subsequent to substantial completion to address the new requirement.

g. "Building Automation System testing not completed." This statement is misleading, as shown in the 15900 BAS Functional Test: 15900 BAS FT.

h. "Testing and Balancing not completed." This statement is misleading as the building automation system and testing and balancing was completed on June 14, 2015. Please note that there is a typographic error on page 5 of 187 in 15990-005.1.

i. "NOX domestic water does not conform to OBO codes regarding drinking water." This statement is incorrect. The water on compound has been and continues to be safe to drink and is processed through an on-compound water treatment plant. OBO Facilities has adopted a combined World Health Organization (WHO) and Environmental Protection Agency (EPA) standard testing method that allows testing of water in Afghanistan and fulfills contractual requirements. In a full EPA-standard test, a bacterial test is required no more than 24 hours after a water sample is taken. Since there are no such EPA-rated testing facilities in Afghanistan, airport restrictions and security requirements make it impossible to test the water in Dubai or a neighboring country within 24 hours. The NOX domestic water has been sourced from the Kabul Compound Water Supply, and OBO has deemed this adequate to fulfill this contractual requirement.

j. "Hot water temperature control in piping systems does not meet contract specifications." This statement is misleading. The temperature of the hot water at the industrial sinks in the NOX cafeteria kitchen did not initially achieve the required temperature for the cleaning of pots and pans according to the Specification. This was easily remedied by adjusting the valve beyond the preset stops, thus allowing a greater percentage of hot water to flow to the sink fixtures, and thereby achieving the required temperature at the faucet/sprayer outlet

OBO Responses to Recommendations

OIG Recommendation 1: OIG recommends that the Bureau of Overseas Buildings Operations issue a Construction Alert defining which building equipment and systems must be fully commissioned prior to substantial completion and update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to include those requirements.

OBO Response, December 2017: OBO does not concur with this recommendation, as the process in place meets the intent of this recommendation. OBO's Construction, Facilities, and Security Management Directorate (OBO/CFSM) has instituted an Operations & Maintenance (O&M) Turnover Matrix for OBO's projects that will raise the number of O&M Deliverables from 11 items to over 40. Projects awarded in Fiscal Year 2018 will implement this new matrix. Projects awarded prior to this date will utilize this matrix on a case-by-case basis. OBO's current policy allows for the flexibilty necessary to make decisions based on life-safety issues, and still include management controls to determine what needs to be fully commissioned at the appropriate time in the project.

Additionally, OBO is adding a full-time O&M Transition Coordinator (OMTC) position, independent of the General Contractor, who will help ensure that the turnover of projects is a smooth transition for all parties. The primary duties of the coordinator are to provide assistance to the Facility Manager (FM) and the PD with transitioning projects from the construction activities to the O&M phase. The position shall require coordination of activities between the PD's on-site Quality Assurance (QA) staff, the commissioning agent, and post FM staff. The incumbent will reside at post for 12-24 months beginning approximately one year before post transition, remaining at post for up to a year after transition, which would include the warranty management phase of the contract (See Attachment No. 4).

OIG Recommendation 2: OIG recommends the Bureau of Overseas Buildings Operations require project directors to certify that all required building equipment and systems are fully commissioned prior to issuing the certificate of substantial completion.

OBO Response, December 2017: OBO does not concur, as the process in place meets the intent of this recommendation. Per the response to recommendation one, OBO has chosen to include additional management controls to ensure that the commissioning status is fully transparent and utilitizes the best collective judgement of the FM and PD deployed at post, supported by the commissioning agent. Again, OBO's current policy allows for the flexibilty necessary to make decisions based on life-safety issues, and includes management controls to determine what needs to be fully commissioned at the appropriate time in the project.

OIG Recommendation 3: OIG recommends that the Bureau of Overseas Buildings Operations establish and implement internal controls to verify that all required documentation in support of commissioning testing is completed prior to substantial completion. This should include all pre-functional checks, functional performance tests, and integrated systems tests to ensure that building equipment and systems are functioning as intended.

OBO Response, December 2017: OBO does not concur, as the process in place meets the intent of this recommendation. Per the response to recommendation one, OBO is implemeting management controls to ensure that the commissioning status is fully transparent and utilitizes the best collective judgement of the FM and PD deployed at post, supported by the commissioning agent. Again, OBO's current policy allows for the flexibilty necessary to make decisions based on life-safety issues, and includes management controls to determine what needs to be fully commissioned at the appropriate time in the project.

OIG Recommendation 4: OIG recommends that the Bureau of Overseas Buildings Operations move responsibility for oversight and management of commissioning agents from the Office of Construction Management to the Office of Facility Management. Specifically, the Office of Facility Management should oversee all aspects of the commissioning process, including (a) ensuring that commissioning agents have fulfilled the terms outlined in the statement of work; (b) verifying that all building systems are designed, installed, and tested to meet the

Department's contract requirements; and (c) ensuring that commissioning of all major systems is done before the project is declared substantially complete.

OBO Response, December 2017: OBO does not concur with this recommendation, as the process in place meets the intent of the recommendation. As noted above, OBO has created a mandatory OMTC position for all new capital construction projects. This position reports to OBO/CFSM on any issues concerning commissioning and system/equipment acceptance problems or concerns for immediate resolution within OBO prior to final acceptance of the facility by the Contracting Officer. The established OMTC position, augmented project transition/turnover checklist, and FAC validation, in advance of the issue of the Certificate of Occupancy, are imperatives to ensure that proper checks and balances are in place and that the intent of the contract requirements have been met (See Attachment No. 5).

OIG Recommendation 5: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to include procedures for identifying and approving instances in which it is appropriate to issue the certificate of substantial completion before commissioning has been fully completed. Specifically, these protocols should include mechanisms that (a) require a formal waiver be issued by the construction executive to proceed with substantial completion and occupancy even though commissioning is not yet complete, (b) establish milestones for completing the commissioning process after substantial completion and occupancy, and (c) execute a contract modification requiring the contractor to grant an extended warranty for those systems that were not commissioned at the time of substantial completion.

OBO Response, December 2017: OBO does not concur, as the process in place meets the intent of this recommendation. Again, OBO's current policy allows for the flexibilty necessary to make decisions based on life-safety issues, and includes management controls to determine what needs to be fully commissioned at the appropriate time in the project.

OIG Recommendation 6: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) as well as the OBO Guide to Excellence in Diplomatic Facilities to ensure that references to the commencement of the warranty period are consistent with FAR 52.246-21, Warranty of Construction. Specifically, existing policies and procedures should be updated to indicate that the warranty period either begins at final acceptance unless the government takes possession of any part of the work before final acceptance, in which case, the warranty shall begin at the date the Government takes possession. OBO should also explicitly define when the Government officially takes possession of the completed work, including whether possession occurs at substantial completion or at the time of occupancy.

OBO Response, December 2017: OBO concurs with this recommendation and will make sure to update documents consistent with FAR 52.246-21. However, the Guide to Excellence in Diplomatic Facilities will not be updated as it is no longer in use.

OIG Recommendation 7: OIG recommends that the Bureau of Overseas Buildings Operations establish requirements in its Policy and Procedures Directive for the Commissioning and

Transition to Occupancy of Overseas Facilities (P&PD CM 01) for the preparation and submission of key project documents for newly constructed facilities, including (a) owner's project requirements, (b) a basis of design document, (c) systems manuals, (d) a commissioning plan, and (e) a final commissioning report. These documents should be prepared and submitted at the appropriate interval of construction for each building or facility constructed by the Bureau of Overseas Buildings Operations. Additionally, the requirements should indicate the parties responsible for preparation, review, and approval of each of the key project documents.

OBO Response, December 2017: OBO does not concur, as the process in place meets the intent of this recommendation. Contract deliverables are included in the appropriate contract language. The Systems Manual is a deliverable from the general contractor, and the Commissioning Plan and Commissioning Report are deliverables from the commissioning agent. Owner's Project Requirements (OPR) and Basis of Design (BOD) documents are created in the planning and design phases of the project, and do not apply to the P&PD CM01, other than being included as sections in the Systems Manual. Further specifics on the development of these documents are provided below:

- **The Systems Manual, template was broadcast in Construction Alert A-2016-01 (See Attachment No. 6), issued on February 1, 2016, and thereafter has been incorporated in the Division 1 Specs.**
- **Deliverable requirements for the Commissioning Plan and Commissioning Report are clearly defined in the Scope of Work (SOW) template used for all commissioning agent Task Orders (IV. B and V. N., also under XII Required Submittals; See Attachment No. 7).**
- **A BOD deliverable and template has been added to the SOW for Design contracts on Capital projects (Section 7 of the AE SOW; See Attachment No. 8).**
- **For an OPR, rather than a single document, OBO uses a combination of our Standards, Specs, and project specific documents, such as the SRP, provided to the designer and included in the AE SOW.**

OIG Recommendation 8: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to require OBO project directors and facility managers to establish a memorandum of agreement 9 months prior to the estimated substantial completion target date to facilitate the building turnover process. This memorandum of agreement should, at a minimum, (a) define the type of access that facility management personnel and O&M contractors should be given to new buildings prior to substantial completion, (b) specify relevant documentation, such as punch lists, lists of equipment to be maintained, and commissioning documentation, that should be provided to facility managers and O&M contractors, and (c) establish timelines for providing building access and documentation to facility personnel and O&M contractors prior to substantial completion and occupancy.

OBO Response, December 2017: OBO does not concur, as the process in place meets the intent of this recommendation. The full-time OMTC staff position will facilitate the type of access, documentation, project participation, and deliverables envisioned in Recommendation 8.

OIG Recommendation 9: OIG recommends that the Bureau of Overseas Buildings Operations update its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) to require OBO project directors and facility managers to hold a pre-turnover meeting approximately 60 days prior to substantial completion. The entire project team should be included in this meeting with participants discussing the status of construction, commissioning, required turnover documentation, and the planned schedule and outstanding actions required to ensure a smooth and successful turnover of facilities.

OBO Response, December 2017: OBO does not concur, as the process in place far exceeds the intent of this recommendation. In practice, as the facilities approach systems commissioning and substantial completion, PDs, FMs, and the commissioning agent meet on an almost daily basis with the construction contractor and other relevant project stakeholders to discuss, among other things, the status of construction, commissioning, required turnover documentation, the planned schedule, and outstanding actions required to ensure a smooth and successful turnover of facilities.

OIG Recommendation 10: OIG recommends that the Bureau of Overseas Buildings Operations develop requirements mandating the use of a phased approach for projects that involve the construction of multiple buildings or facilities. This approach should outline specific phasing requirements for each building or facility constructed, including separate and distinctive commissioning, substantial completion, turnover, and acceptance requirements. This approach should also include protocols for a phased O&M turnover process, requiring the contractor to provide key O&M deliverables at the completion of each individual building if multiple buildings or facilities are being constructed under a single OBO construction contract.

OBO Response, December 2017: OBO does not concur, as the process in place meets the intent of this recommendation. Note that upcoming phased projects will feature expanded Division 1 specifications addressing many of these concerns. Additionally, while somewhat new in 2009 when the Kabul contract was written, OBO now uses fairly sophisiticated phasing plans for our phased projects.

OBO is concerned that including separate and distinctive commissioning, substantial completion, turnover, and acceptance requirements has the potential of significantly extending overall project completion and occupancy.

- **Phased turnover of Facilities would require an already stretched FM staff to maintain two mission compounds at the same time.**
- **O&M manuals and other project deliverables are not broken down by facilities.**
- **Would require separate certificates of occupancy for the phased turnover of facilities.**
- **The language we are developing is working to address these concerns.**

APPENDIX E: OIG REPLY TO THE BUREAU OF OVERSEAS BUILDINGS OPERATIONS' GENERAL AND TECHNICAL COMMENTS

In addition to commenting on the recommendations made in this audit report, the Bureau of Overseas Buildings Operations (OBO) provided general and technical comments to a draft of this report (see Appendix D). In some instances, OBO provided additional documentation to substantiate its comments, and the Office of the Inspector General (OIG) reviewed all such additional materials. Because the additional documentation is voluminous, OIG elected not to include it as an enclosure to this audit report. However, OIG will make the additional documentation available upon request, consistent with applicable law.

OBO's General Comment

OBO stated that "the entire OIG audit of the Kabul construction project, beginning in 2015, was conducted during an active construction project in an unstable region." Because of this, "[the audit] should not be used as a basis for changing policies and procedures worldwide." OBO further stated the bureau began taking "steps to improve the commissioning and hand-off processes with the fundamental goal of ensuring Fire and Life Safety, and Physical and Technical Security for our diplomats and staff working overseas" around the time OIG began its audit and that it "now prioritizes commissioning to ensure that newly completed facilities are in accordance with site-specific commissioning plans and procedures." OBO requested that the OIG review other construction projects such as the new classified office annex in Embassy Kabul or projects currently in the commissioning phase, such as Nouakchott, The Hague, Dushanbe, Islamabad, or Amman to gain a comprehensive view of current management practices, "which would better inform any recommendations for changes."

OIG's Reply

OIG disagrees with OBO's assertion that the findings and recommendations from this review of the construction of the New Office Annex (NOX) and Staff Diplomatic Apartment-1 (SDA-1) at Embassy Kabul cannot be used as the basis for changing policies and procedures worldwide. Indeed, the particular complications of construction in such environments increase, rather than decrease, the need for clear guidance that fully considers potentially competing interests, including safety and security. More generally, regardless of the security environment, actions taken to strengthen the commissioning process will assist the Department in taking meaningful steps to better manage OBO construction projects worldwide. For example, ensuring that major building systems are fully commissioned prior to substantial completion, preparing key project documents to determine the extent to which agreed-upon project requirements were followed, and ensuring that Facility Management personnel are adequately prepared to accept responsibility for O&M are all beneficial steps in any circumstance. OIG also notes that OBO's Guide to Excellence in Diplomatic Facilities as well as its Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01), draw no

distinction in processes for construction projects implemented in an unstable region and those that are not. OBO's statement that it now prioritizes commissioning of completed facilities "in accordance with site-specific commissioning plans and procedures" may mitigate the weaknesses OIG found at Embassy Kabul, but only if these site-specific commissioning plans and procedures are fully documented and shared with stakeholders.

Although OBO stated that the Guide to Excellence in Diplomatic Facilities is no longer used, at the time of the audit, the Guide was a principal document governing OBO's work worldwide. Specifically, according to OBO, the Guide was intended to outline the general policies to be applied to all building projects. Further, OBO has not provided any information indicating that the Guide has been formally retired, rescinded, or superseded.

With regard to OBO's request to review other construction projects, OIG plans to review the commissioning of the New Embassy Compound at U.S. Embassy Islamabad, Pakistan, later this year. OIG also plans to review other construction projects at U.S. Embassy Kabul, Afghanistan, including the construction and commissioning of two new residential apartments, Staff Diplomatic Apartment-2 and Staff Diplomatic Apartment-3.

OBO's Technical Comment

OBO requests that OIG remove Table 1, "Commissioning Status of Major Building Systems at Substantial Completion," and Table 2, "Status of O&M Deliverables at Substantial Completion," from the audit report because "there are more accurate ways to depict project status at the time of substantial completion, such as including the percentage of functional test reports that were completed at the time of occupancy." OBO stated that "OIG's table shows the hydronic pumps as 'not fully commissioned' at substantial completion. This is incorrect according to attachment 3, which shows all systems being completed for this particular item prior to occupancy in June 2015. One component of the pump, the inertial base, which is not critical for occupancy, was completed later; and the Commissioning Agent signed off on the system during the scheduled visit in December 2015."

OIG's Reply

OBO officials raised concerns about Tables 1 and 2 at the audit exit conference when the findings outlined in this report were presented and discussed in detail. At that time, OIG explained that, to establish which major systems were not fully commissioned at substantial completion (as presented in Table 1), OIG referenced OBO's Guide to Excellence in Diplomatic Facilities as criteria. That document explicitly states that "commissioning of all major building systems must be done before a project is declared substantially complete." The Guide does not reference percentage of completed functional tests as a standard for declaration of substantial completion. Moreover, OIG also used OBO's Policy and Procedures Directive for the Commissioning and Transition to Occupancy of Overseas Facilities (P&PD CM 01) as the basis for Table 2. P&PD CM 01 also states that most commissioning activities should be targeted for completion by the substantial completion date of the project, noting that the only exceptions might include seasonal equipment

testing during certain times of the year or systems operational review prior to the expiration of the 1-year warranty period. That guidance is still in effect.

Finally, with respect to the hydronic pumps, OIG reviewed the documents provided by OBO. The documentation provided does not demonstrate that the chillers, boilers, as well as chilled hydronic water secondary pumps, had been fully commissioned. Rather, those documents show that functional tests had been conducted on these particular pieces of equipment. The completion of functional tests on a particular piece of equipment does not mean that the system was fully commissioned. This was a point asserted by the Commissioning Agent during the audit, in addition to being discussed and confirmed by OBO during a meeting to discuss the audit findings and recommendations. Further, OBO did not provide complete commissioning documentation for functional testing for all hydronic pumps to verify their sequence of operation or functionality. Moreover, during fieldwork, OIG received information on which building systems had been fully commissioned at the time of substantial completion from the Commissioning Agent. To corroborate the information provided by the Commissioning Agent, OIG asked the Project Director to also provide information on the status of building systems at substantial completion. OIG planned to compare and contrast the information maintained by the Commissioning Agent with the information maintained by OBO/CFSM/CM to determine any discrepancies between the two data sets. In response to OIG's request, though, the OBO Project Director referred OIG back to the Commissioning Agent. As a result, the data presented in this report was based on information provided by the Commissioning Agent for all building systems not fully commissioned when substantial completion was declared. OIG made no changes to the report on the basis of these comments.

OBO's Technical Comment

OBO stated that OIG is incorrect in believing that the project's commissioning status at substantial completion contributed to a range of building deficiencies after occupancy. OBO stated that it "conducted a number of senior level reviews of the SDA-1 and NOX completion, confirming that there are no issues out of the ordinary for large building projects of their type." Furthermore, OBO stated that Facilities Management at the embassy is "currently tracking fewer than normal maintenance calls for the SDA-1 and NOX buildings, compared to the number of occupants."

OIG's Reply

OIG's primary point in this audit report is that major building systems were not fully commissioned and readied for performance when substantial completion was declared. Had the systems been fully commissioned, deficiencies would have been addressed prior to occupying the buildings. Moreover, according to the Commissioning Agent, a number of problems resulted from the premature declaration of substantial completion were problems that Caddell (the construction contractor) was required to resolve under the terms of the contract. Once substantial completion was declared, however, responsibility for correcting problems fell to Facility Management personnel and PAE (the operations and maintenance contractor). Further, because OBO policies and

procedures identify substantial completion as a contractual milestone that begins the warranty period for all systems and equipment, OIG's focus on the status of commissioning is intended to identify risks to the Department associated with accepting facilities prior to fully completing the commissioning process and the subsequent start of the warranty period. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment

OBO stated that "disagreements between the Commissioning Agent and the Project Director should not be used as a primary resource in determining the root cause of an issue or a process, such as the commissioning process." Therefore, OBO requested that OIG remove references to those disagreements from the audit report.

OIG's Reply

OBO's comments on this point do not fully acknowledge the significance of OIG's analysis of this issue. OIG's intent is not to emphasize the mere fact of disagreement but rather the consequences of this disagreement. In particular, OIG concluded that a combination of several factors led to the failure to complete the commissioning process. One of those factors was the persistent and unresolved disagreements between the OBO Project Director and the Commissioning Agent concerning the readiness of major building systems. As described in the report, major systems were not fully ready when the Project Director moved forward with substantial completion. This fact is important because, according to the Commissioning Agent and others, a number of problems resulted from the premature declaration of substantial completion. Had the OBO Project Director and the Commissioning Agent been able to reach agreement about best how to address the outstanding issues affecting the systems in question, commissioning of all major systems may have been completed prior to declaring substantial completion. Indeed, this disagreement had very practical consequences with respect to addressing outstanding issues. In particular, many of the problems were issues that Caddell was required to resolve under the terms of the contract. However, once substantial completion was declared, responsibility for correcting problems shifted to Facility Management personnel and PAE. OBO's comments also fail to acknowledge the fact that the ongoing disagreements reflected significant weaknesses in the organizational placement of the commissioning agent—weaknesses that affected the commissioning agent's' ability to perform her responsibilities. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment

OBO requested that OIG remove Appendix C, "Previously Identified Deficiencies Affecting the NOX and SDA-1," from the audit report because the appendix mentions previously issued audit reports on Kabul that have been or are being addressed. OBO specifically highlighted the *Management Alert: Hazardous Electrical Current in Office and Residential Buildings Presents Life, Health, and Safety Risks at U.S. Embassy Kabul, Afghanistan* (MA 16-01, April 2016) and stated that OIG has closed the recommendations "based on OBO's remedial actions and statements in

response to the recommendations, along with [its] representation that voltage is not present to drive the objectionable current in the NOX and SDA-1, thereby mitigating risk to occupants."

OIG's Reply

In the course of the audit, OIG found deficiencies affecting a range of building systems in the NOX and SDA-1 that it believed required prompt corrective action; thus, OIG reported these deficiencies via a Management Alert and two Management Assistance Reports. These reports were early communication of significant issues identified during the audit. Because this audit report is the final report focusing on the NOX and SDA-1, it is fitting to summarize and present related findings from those reports in this final audit report. In addition, OIG summarized the status of the recommendations made in the Management Alert and Management Assistance Reports in this report and noted when corrective actions had been completed. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment

OBO stated that a number of the statements in an August 2015 briefing report that the Commissioning Agent gave to the facilities personnel regarding the status of the NOX were misleading. Specifically, OBO questioned statements by the Commissioning Agent regarding the status of the chillers, boilers, fan coil units, chilled hydronic water secondary pumps, power monitoring system, building automation system, and testing and balancing, among others.

OIG's Reply

During the course of this audit, OIG obtained information from the Commissioning Agent about the commissioning status of all building systems at the time substantial completion was declared. OIG requested that the Project Director also provide information regarding the commissioning of building systems. OIG planned to compare and contrast the information maintained by the Commissioning Agent with the information maintained by the OBO Project Director to determine any discrepancies between the two data sets. In response to OIG's request, though, the OBO Project Director referred OIG back to the Commissioning Agent. As a result, the data presented in this report was based on information provided by the Commissioning Agent for all building systems not fully commissioned when substantial completion was declared. Accordingly, OIG used information provided by the Commissioning Agent and met with Facilities Management personnel to corroborate the information highlighted in the Commissioning Agent's report. At no time during the audit did OBO officials refute the findings in the Commissioning Agent's report. Further, OIG reviewed and analyzed the additional documentation OBO provided but did not find any substantial information to refute the majority of the findings outlined in the Commissioning Agent's August 2015 briefing report. Based on information provided by OBO in response to this draft, OIG removed a reference on page 15 to the Commissioning Agent's assessment of domestic water systems in the NOX at the time of substantial completion. However, OIG made no other changes to the report on the basis of OBO's comments. Selected highlights from OIG's analysis of the documentation provided by OBO are outlined below:

With regard to the chillers, OBO provided a checklist and documentation of factory start-up testing. However, according to USACE, the startup was conducted in October 2013, and the commissioning checklist provided as an on-site verification does not offer any indication that the performance parameters conducted in the factory were replicated in the field. Further, July 13, 2015 commissioning meeting minutes (one month after substantial completion of the NOX) note ongoing problems with the NOX chillers, including compressor failures.

With regard to the boilers, OBO provided start-up testing performed by the factory representative, which provides basic operating data and confirmed that the system could start up. It does not, however, verify or validate the performance parameters or verification of its sequence of operation. Further, commissioning meeting minutes dated July 2015 note that the boilers are "not operational" and that "there seems to be a problem with the fuel system." Finally, the commissioning agent's signature for the boilers is dated February 23, 2016, seven months after substantial completion date of the NOX.

With regard to fan coil units, July 2015 commissioning meeting minutes note that the fan coil unit in the level 1 EC room "requires commissioning."

With regard to the chilled water secondary pumps, commissioning meeting minutes note that the Commissioning Agent's signature on the chilled hydronic water pumps is dated December 7, 2015, six months after substantial completion of the NOX. Moreover, pumps were missing the vibration isolation mounts at the time of commissioning which means they could not be certified to be fully operational and compliant with contract requirements.

With regard to the power monitoring system, commissioning meeting minutes from July 2015 through December 2015 note ongoing issues with the power monitoring system. Specifically, commissioning meeting minutes from December 2015 (six months after substantial completion) note that "power monitoring systems for the NOX and SDA-1 are still not operational. The power monitoring technician will return to site in February 2016."

With regard to the Building Automation System, according to USACE, OIG was not provided with all the commissioning documentation for functional testing of hydronic pumps or other equipment connected to the Building Automation System that required commissioning to verify its sequence of operation. Further, commissioning meeting minutes from November and December 2015 note ongoing issues with the Building Automation System. Specifically, commissioning meeting minutes from December 2015 note that "several openings have been found in the ducts, and fire dampers have been found in the closed position. The commissioning of the Building Automation System cannot commence until the Air Handling Units provide the required design airflows."

ABBREVIATIONS

ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
DS	Bureau of Diplomatic Security
HVAC	Heating, Ventilation, and Air Conditioning
NFPA	National Fire Protection Association
NOX	New Office Annex
OBO	Bureau of Overseas Buildings Operations
OBO/CFSM	Bureau of Overseas Buildings Operations, Construction, Facility, and Security Management
OBO/CFSM/CM	Bureau of Overseas Buildings Operations, Construction, Facility, and Security Management Directorate, Office of Construction Management
OBO/CFSM/FAC	Bureau of Overseas Buildings Operations, Construction, Facility, and Security Management Directorate, Office of Facility Management
OBO/CFSM/SM	Bureau of Overseas Buildings Operations, Construction, Facility, and Security Management Directorate, Office of Security Management
OBO/OPS/FIR	Bureau of Overseas Buildings Operations, Operations Directorate, Office of Fire Protection
O&M	Operations and Maintenance
POWER	Task Force Protect Our Warfighters and Electrical Resources
SDA-1	Staff Diplomatic Apartment-1
USACE	U.S. Army Corps of Engineers

OIG AUDIT TEAM MEMBERS

James Pollard, Division Director
Middle East Region Operations
Office of Audits

Patrick Dickriede, Audit Director
Middle East Region Operations
Office of Audits

Samantha Carter, Audit Manager
Middle East Region Operations
Office of Audits

Ami Ballenger, Senior Management Analyst
Middle East Region Operations
Office of Audits

Meg Hardy, Senior Management Analyst
Middle East Region Operations
Office of Audits

HELP FIGHT

FRAUD. WASTE. ABUSE.

1-800-409-9926
HOTLINE@stateoig.gov
If you fear reprisal, contact the
OIG Whistleblower Ombudsman to learn more about your rights:
WPEAOmbuds@stateoig.gov