OIG

Office of Inspector General

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

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Management Assistance Report: Improper Installation of Key Components of U.S. Embassy Kabul, Afghanistan's Fire Alarm System Needs Prompt Attention

MANAGEMENT ASSISTANCE REPORT

Summary of Review

During the course of an audit of Bureau of Overseas Buildings Operations (OBO) construction projects at the U.S. Embassy in Kabul, Afghanistan, the Office of Inspector General (OIG) was alerted to potential risks to personnel and property due to the improper installation of the embassy's fire alarm system. OIG concluded that the system was, in fact, improperly installed and did present safety risks. OIG is therefore issuing this Management Assistance Report to prompt immediate action to address the identified deficiencies.

OBO and the Bureau of Administration have undertaken a major office and residential expansion at the U.S. Embassy in Kabul. As part of this expansion, in June 2010, the bureaus contracted with Caddell Construction, Inc. (Caddell), to build a number of new facilities at the embassy. These facilities include residential and office buildings, warehouses, parking and vehicle maintenance facilities, power plants, perimeter walls, guard towers, and compound access control facilities. Caddell is required to install fire alarm systems in each of the new buildings throughout the compound as part of its contract.

Fire alarm control panels installed in 23 buildings on the embassy compound are key components of the fire alarm system. Fire alarm control panels monitor and control each fire alarm-initiating and signaling device through microprocessors and system software. Fire alarm control panels are connected throughout the embassy compound via fiber optic cables that transmit data between each building and to Post One, a communications center staffed by Marine Security Guards. The Marine Security Guards at Post One are on duty 7 days a week, 24 hours a day and are responsible for ensuring that communications are routed to appropriate responders during emergencies or security threats. When a fire emergency occurs at any building on the embassy compound, Post One is alerted through the network of fire alarm control panels. Post One, in turn, alerts the embassy fire department and other emergency response personnel.

In July 2017, the embassy's principal operations and maintenance (O&M) contractor, PAE Government Services (PAE), discovered that underground fiber optic cables on the west side of the embassy compound were accidentally cut by a construction worker. As a consequence of the damage to the fiber optic cables, fire alarm control panels in eight buildings could not transmit data to Post One for more than 6 months. After completion of OIG's fieldwork in January 2018, OIG shared its findings with OBO officials. In response, embassy facility managers took steps to repair the damaged fiber optic cables and restored connectivity between the affected buildings and Post One.

OIG also found that the existing fiber optic cable network does not have a separate redundant path as required by Section 12.3.7 of the National Fire Protection Association (NFPA 72) code.[1]

[1] NFPA 72: National Fire Alarm and Signaling Code, 2013 Edition. The NFPA is a global nonprofit organization, established in 1896, devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. Its' codes and standards are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation around the world.

According to NFPA, a redundant path helps ensure the network's continued functionality if one of the cables is damaged. Without a redundant path, damage in one location can render sections of the network inoperable. Additionally, OIG found that seven fire alarm control panels on the east side of the embassy compound are not connected to Post One. Rather, these seven control panels are on a separate network connected to a guard post staffed by contractor security guards on the east side of the compound. Engineers in OBO's Office of Fire Protection told PAE that this configuration is inconsistent with OBO standards and that ideally all fire alarm control panels on the embassy compound should be connected to the Post One communications center.

According to OBO officials, because the fiber optic cable network is part of a larger project involving the construction of multiple buildings and facilities, there is no requirement to install a redundant path until the end of the entire construction project, which is currently scheduled to be completed in March 2019. Furthermore, according to OBO officials, because the seven fire alarm control panels on the east side of the embassy compound are in temporary structures, there is likewise no requirement that those structures be connected to Post One. Notwithstanding OBO's position, OIG made two recommendations to Embassy Kabul, in coordination with OBO, to take immediate actions to correct the identified deficiencies because they pose potential risks to the safety of embassy personnel and property.

Embassy Kabul deferred to OBO on the recommendations, stating that OBO has jurisdictional authority over the report's recommendations. OIG accepted the transfer of the action office of primary responsibility from Embassy Kabul to OBO and changed the recommendations accordingly. OBO did not concur with Recommendation 1, which called for the immediate establishment of a separate redundant path for the fire alarm system. OIG considers this recommendation unresolved and will track its implementation during the audit compliance process. OBO neither agreed nor disagreed with Recommendation 2 but made a determination, as OIG recommended, regarding the seven fire alarm control panels on the east side of the embassy compound. OIG therefore considers this recommendation closed, although, as described in more detail subsequently, OIG remains concerned regarding the safety issues implicated by the current situation. A synopsis of OBO's comments to the recommendations and OIG's reply follow each recommendation in the Audit Results section of this report. In addition to comments related to the recommendations, OBO provided general and technical comments to a draft of this report. Embassy Kabul's and OBO's comments are reprinted in their entirety in Appendix A and B, respectively. OIG's replies to OBO's general and technical comments are presented in Appendix C.

BACKGROUND

The Importance and Types of Fire Alarm Systems

A key aspect of fire protection is to recognize a developing fire emergency and alert the building's occupants and appropriate first responders as quickly as possible. An effective fire alarm system provides the means to detect a developing fire, alert building occupants of the need to evacuate, and transmit an alarm notification signal to the fire department and other emergency responders. In certain circumstances, the activation of a fire alarm can be used to open a valve on the sprinkler system riser, which activates the sprinkler system. The main components of a fire alarm system include smoke detectors; manual alarms (or pull stations) that enable a person who detects a fire to raise the alarm; and fire alarm control panels that receive signals from alarm-initiating devices, process those signals, and activate visual and audible alarms.

At Embassy Kabul, fire alarm control panels installed in each building are crucial components of the embassy's fire alarm system. Fire alarm control panels monitor and control each fire alarm-initiating and signaling device and are connected throughout the embassy compound via fiber optic cables that transmit data between each building and to Post One, a communications center at the embassy staffed by Marine Security Guards. Marine Security Guards at Post One are on duty 7 days a week, 24 hours a day and are responsible for ensuring that communications are properly routed during emergencies or security threats.[2] When a fire emergency occurs at any embassy building, Post One is alerted through the existing network of fire alarm control panels. Post One, in turn, alerts the embassy fire department and other emergency response personnel.

The fire alarm control panel is the "brain" of the fire detection and alarm system. It monitors the various alarm input devices, including manual and automatic detection components, and activates alarm output devices such as horns, bells, warning lights, and building controls. The type of panel used at Embassy Kabul is an addressable or "intelligent" system that is intended to monitor and control the capabilities of each alarm-initiating and signaling device through microprocessors and system software. Each fire alarm control panel is, in effect, a small computer overseeing and operating a series of alarm input and output devices.

In an addressable alarm system, each initiating device (i.e., smoke detector, manual pull station, or sprinkler waterflow switch) is given a specific identification or "address." This address is programmed into the fire alarm control panel's memory along with information that includes the type of device, its location, and specific response details (such as which alarm devices are to be activated). The control panel's microprocessor sends a constant interrogation signal over each circuit to the initiating devices to inquire about its status (either normal or emergency). This active monitoring process occurs in rapid succession, providing system updates every 5 to 10

[2] Fiber optics allow for fire alarm data to be transmitted over long distances and enable a quicker response to and from the central fire command station.

seconds. Because each initiating device has an identified address or location, the exact device that triggered the alarm can be quickly identified and its location pinpointed. This makes addressable alarm systems ideal for use in large buildings, campuses, or compounds.

Purpose of this Management Assistance Report and Audit

This Management Assistance Report is intended to provide early notice of deficiencies that OIG identified during an audit of OBO construction projects at Embassy Kabul. The primary objective of the audit was to determine whether OBO followed Department of State policies, procedures, and directives governing the commissioning, substantial completion, and turnover of newly constructed buildings at the embassy. OIG is reporting the deficiencies discussed in this Management Assistance Report in accordance with generally accepted government auditing standards. In performing the work related to these deficiencies, OIG interviewed facility managers and contractors responsible for the O&M of post facilities that include fire safety systems. OIG also reviewed applicable criteria and supporting documentation, including manufacturer's specifications for the fire safety systems installed at Embassy Kabul and NFPA 72 standards. OIG believes that the evidence obtained provides a reasonable basis for the deficiencies identified in this report.

RESULTS

Improper Installation of Key Components of Embassy Kabul's Fire Alarm System Requires Immediate Attention

A fire alarm network requires a continuous circuit to function. Damage to any part of the circuit may result in interruptions to communications between fire alarm control panels and the central fire command center (Post One). NFPA 72 accordingly requires pathways connecting fire alarm control panels to be configured with a separate redundant path to provide survivability—an "alternate path"—in case of damage or failure to one part of the network.[3] As discussed previously, Caddell is required to install fire alarm systems in each of the new buildings throughout the compound as part of its contract. The contract explicitly identifies the types of circuits—Class A circuits—and network communications that should be used in doing so.[4] NFPA 72, Chapter 12, Section 12.3.7 specifically states that "Class A and Class X circuits using physical conductors (for example, metallic, optical fiber) shall be installed such that the outgoing and return conductors, exiting from and returning to the control unit, respectively, are routed separately."[5] According to NFPA, the requirement is designed to provide adequate separation between the outgoing and return cables to help ensure the network's continued functionality if

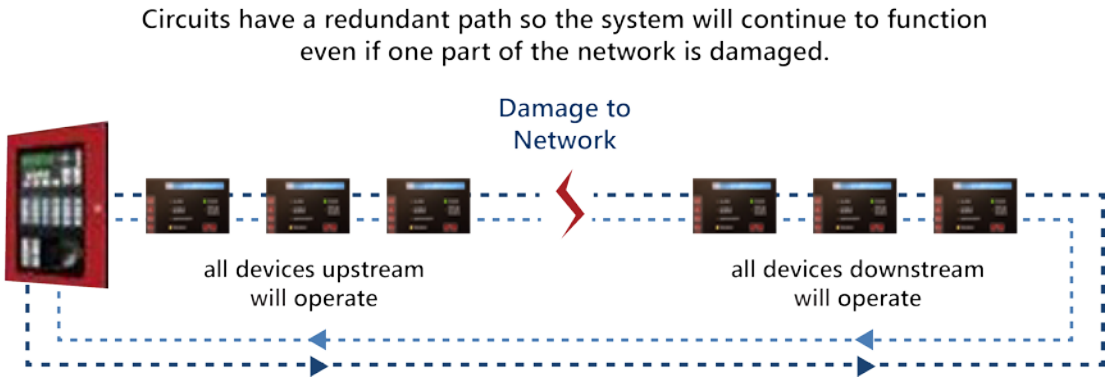
[3] Chapter 12 of NFPA defines the characteristics of the circuits and pathways used in a fire alarm system by their performance under various adverse conditions and by their ability to survive attack from fire, known as *survivability*.

[4] According to the contract, "Caddell must provide Style 7 (Class A) network communications, plus separate conduit paths for the risers, circuits, and network communications. Additionally, [Caddell is] required to install Style 7 (Class A) circuits between buildings. Each network path (primary and redundant) must be in a separate conduit and trench."

[5] NFPA 12.3.1 requires Class A pathways to include a redundant path.

one of the cables is damaged. That is, these redundant paths allow the system to continue to function even if one part of the network is damaged. Figure 1 shows an example of a redundant path consistent with NFPA 72 requirements.

Figure 1: Redundant Path Required by NFPA 72



Source: OIG generated on the basis of redundancy requirements outlined by NFPA 72.

OIG found the pathways between fire alarm control panels at Embassy Kabul do not have a separate redundant path, as required by NFPA 72, to provide survivability in case of damage or failure to one part of the network. According to PAE, a secondary path was installed. However, rather than being routed separately, the existing fiber optic cables run in a parallel path. Because the fiber optic cables run in the same direction and are bundled together in the same conduit, damage to one part of the network can render sections of the network inoperable. This routing is contrary to NFPA 72 standards. OBO officials acknowledged that a redundant path has not been installed throughout the embassy compound but stated that, because the fiber optic cable network is part of a larger project involving the construction of multiple buildings and facilities, there is no requirement to install such a redundant path until the end of the entire construction project. OIG notes, however, that Caddell began construction on the embassy compound in 2011 and construction is not due to be completed until March 2019. In fact, many of the fire alarm control panels that would have been included in the redundant path are located in buildings that have been in use since 2011. As a result, OBO has postponed compliance with NFPA 72 standards for 8 years while the embassy is under construction. Further, OBO officials have acknowledged that additional proposed modifications to Caddell's contract could further delay completion of construction beyond March 2019.

In addition, OIG found that fire alarm control panels in a number of embassy buildings were not connected to Post One, further compromising the functionality of the embassy's alarm system. Specifically, underground fiber optic cables were damaged in the course of an unrelated construction project in July 2017 when workers accidentally cut cables on the west side of the embassy compound. As a result, fire alarm control panels in eight buildings on the embassy compound were incapable of transmitting data to Post One between July 2017 and January 2018. This meant that, during this time period, Marine Security Guards at Post One could not have received notification via the existing network if a fire had occurred in any of the eight

affected buildings. This was particularly significant for offices or maintenance facilities that may be unoccupied after normal business hours. In an unoccupied building such as a maintenance facility, fire alarm control panels may be the only means by which Post One is notified of a developing fire. Following completion of OIG's fieldwork in January 2017, OIG shared its findings with embassy facility managers and OBO officials. In response to OIG's findings, embassy facility managers repaired the damaged fiber optic cables and restored connectivity between the eight affected buildings and Post One.

Although the damaged cables have been repaired, in the course of its work on this issue, OIG also learned that an additional seven fire alarm control panels on the east side of the embassy compound are also not connected to Post One. These seven control panels are on a separate network connected to a guard post staffed by contractor security guards. Engineers with OBO's Office of Fire Protection stated that this configuration is inconsistent with current OBO standards and that, ideally, all fire alarm control panels throughout the embassy compound should be connected to Post One. According to OBO, the seven fire alarm control panels on the east side of the embassy compound are considered temporary and therefore are not required to be connected to Post One. However, in memos documenting the results of trip reports and fire safety inspections conducted by OBO's Office of Fire Protection, officials highlighted fire alarm control panels that could not transmit data to Post One as a deficiency to be addressed in several new buildings on the Embassy Kabul compound. Although OBO may consider the affected buildings to be temporary, OIG reiterates that a number of the buildings in question have been in use on the compound since Caddell began construction in 2011. This means that many of the affected buildings have not been connected to Post One for 7 years. The fact that these seven fire alarm control panels do not report directly to Post One could delay response times in a fire emergency.

It is OIG's position that the improper installation of key components of Embassy Kabul's fire alarm system requires immediate attention because of the potential safety risk to personnel and property. OIG is therefore making the following recommendations to prompt immediate actions to correct the identified deficiencies.

Recommendation 1: OIG recommends that the Bureau of Overseas Buildings Operations' Office of Fire Protection, in coordination with Embassy Kabul, take immediate action to establish a separate redundant path for the fire alarm system that will allow operational capability to continue in the event of damage to one part of the network, in accordance with National Fire Protection Association requirements.

Embassy Kabul Response: Embassy Kabul stated that, after consultations with OBO's Office of Fire Protection, it determined that OBO has jurisdictional authority over the two report recommendations and will provide responses on behalf of Embassy Kabul.

OBO Response: OBO did not concur with the recommendation, stating that "a separate redundant 'network' circuit is not required by NFPA 72." OBO further stated that "disruption of communication across a 'network' does not diminish or degrade the individual operations

of a Fire Alarm Control Unit (FACU)" and that "the conditions presented by the OIG do not require 'immediate action.'"

OIG Reply: OIG accepted Embassy Kabul's determination to transfer the action office of primary responsibility for the recommendation to OBO and changed the recommendation accordingly. On the basis of OBO's nonconcurrence with the recommendation and absent an acceptable alternative that meets the recommendation's intent, OIG considers this recommendation unresolved and will monitor its implementation during the audit compliance follow-up process.

According to NFPA 72 (sections 12.3.1 and 12.3.7), a separate redundant path for the fire alarm system is required. Specifically, NFPA 12.3.7 states, "Class A and Class X circuits using physical conductors (e.g., metallic, optical fiber) shall be installed such that the outgoing and return conductors, exiting from and returning to the control unit, respectively, are routed separately."

In addition, as OBO points out, the contract with Caddell requires a separate redundant path to be installed: "[Caddell is] required to install Style 7 (Class A) circuits between buildings. Each network path (primary and redundant) must be in a separate conduit and trench." OBO confirmed its understanding of the requirement in its response to a draft of this report, stating that "the embassy compound is still under construction, and a completed Style 7 (Class A) redundant path is part of the current Caddell contract." OBO anticipates that the redundant path will be installed by March 2019 when Caddell completes its construction work. Nonetheless, as noted above, OIG considers this recommendation unresolved because of OBO's decision not to promptly address the recommendation. This recommendation will be considered resolved when OBO agrees to promptly establish a separate redundant path for the fire alarm system that will allow operational capability to continue in the event of damage to one part of the network. This recommendation will be closed when OIG receives and accepts documentation that a separate redundant path has been installed in accordance with NFPA 72 requirements.

Recommendation 2: OIG recommends that the Bureau of Overseas Buildings Operations' Office of Fire Protection, in coordination with Embassy Kabul, take immediate action to determine whether the seven fire alarm control panels currently connected to a guard post on the east side of the embassy compound should instead be connected to Post One and take appropriate action to correct all identified deficiencies.

Embassy Kabul Response: Embassy Kabul stated that, after consultations with OBO's Office of Fire Protection, it determined that OBO has jurisdictional authority over the two report recommendations and will provide responses on behalf of Embassy Kabul.

OBO Response: OBO neither agreed nor disagreed with the recommendation but stated that "all required fire alarm coverage is currently provided to individual buildings, and a means is in place for alarms to notify the fire department." According to OBO, the affected buildings are connected to the Alternate Control Facility and "as long as the [Alternate Control Facility]

is staffed 24 hours a day, [OBO's Office of Fire Protection] (as the Authority Having Jurisdiction)[6] approves this configuration until all new construction is completed and the temporary facilities are decommissioned."

OIG Reply: OIG accepted Embassy Kabul's determination to transfer the action office of primary responsibility for the recommendation to OBO and changed the recommendation accordingly. Because OBO, as OIG recommended, made a determination regarding the seven fire alarm control panels on the east side of the embassy compound, OIG considers this recommendation closed. However, OIG reiterates that, because these seven fire alarm control panels do not report directly to Post One, response times in a fire emergency could be delayed. Memoranda prepared by OBO's Office of Fire Protection summarizing the results of fire safety inspections at Embassy Kabul also highlighted these concerns.

Furthermore, in the January 2018 meeting with OIG to discuss the audit report's findings and recommendations, OBO explained that the affected buildings are temporary structures and therefore not subject to the same standards as permanent structures (buildings in which fire alarm panels are connected to Post One). However, NFPA defines a permanent structure as "a building or structure that is intended to remain in place for a period of more than 180 days in any consecutive 12-month period."[7] A number of the buildings related to this finding have been occupied since 2011—more than 7 years. Applying the NFPA definition, these buildings should be considered permanent structures, and consequently, the affected fire alarm panels should be connected to Post One.

[6] According to the NFPA 3.2.2, the Authority Having Jurisdiction is "an organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure." According to his job description, the director of OBO's Office of Fire Protection is formally designated as the Authority Having Jurisdiction for the Department.

[7] NFPA 101,"Life Safety Code," Section 3.3.271.8 (2012).

APPENDIX A: U.S. EMBASSY KABUL RESPONSE

Embassy of the United States of America

Kabul, Afghanistan

February 12, 2018

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Mr. Norman P. Brown
Assistant Inspector General for Audits
Office of Inspector General

Dear Mr. Brown:

Thank you for sending me the draft Management Assistance Report on January 31 outlining the OIG auditors' concerns regarding improper installation of our fire alarm system components.

After consultations with OBO's Office of Fire Protection, it was determined that OBO/FIRE has jurisdictional authority over the two report recommendations and will be providing the official responses on behalf of Embassy Kabul.

Sincerely,

John R. Bass
Ambassador

cc: OBO – William Moser, Acting

APPENDIX B: BUREAU OF OVERSEAS BUILDINGS OPERATIONS' RESPONSE

United States Department of State

Washington, D.C. 20520

FEB 16 2018

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MEMORANDUM FOR NORMAN BROWN – OIG/AUD

FROM: OBO/RM – Jürg Hochuli/s/

SUBJECT: Draft Management Assistance Report: *Improper Installation of Key Components of the U.S. Embassy Kabul, Afghanistan's Fire Alarm System Needs Prompt Attention,* AUD-MERO-18-XX, January 2018

As requested, attached is OBO's response to the subject report and recommendations.

Attachment:
As stated.

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Office of Inspector General
Management Assistance Report:
Improper Installation of Key Components
of the U.S. Embassy Kabul, Afghanistan's Fire Alarm System Needs Prompt Attention
Report No. AUD-MERO-18-XX, January 2018

OBO General Comments:

- On January 10th, 2018, OBO and OIG held a teleconference to discuss the OIG's initial findings on U.S. Embassy Kabul, Afghanistan's fire alarm systems. Based on this report, OBO notes that the OIG does not seem to have taken into account relevant information provided to them during the teleconference; therefore, this report appears to be largely based on faulty assumptions and an inaccurate understanding of field conditions and OBO standards, procedures, and policies. During the teleconference, OBO explained that at no time was any building's interior fire alarm system inoperable or out of service; both the detection and notification functions remained operational. OBO's priority is the life-safety of embassy staff—at no time was that jeopardized.

- OBO is concerned that the OIG audit team in Kabul did not include personnel with sufficient understanding of fire code interpretation. According to the International Code Committee, fire code interpretation requires five or more years of experience and a professional license.

- OBO requests the following information from OIG:

    - Per the teleconference, please provide the property ID numbers and locations of the eight buildings affected by the damaged fiber optic cable (mentioned in the third paragraph from the *Summary of Review* section).

    - Please provide photographs of the damaged fiber optic cable. Photographs need to show the cut and the cut's location (mentioned in the third paragraph from the *Summary of Review* section).

    - Please provide testing methodology used to confirm post's existing fiber optic cable network does not have a redundant circuit.

    - Please provide methodology used to determine the absence of a separate redundant circuit for Embassy Kabul's fire alarm control panels.

    - Please provide the documentation mentioned in the *Results* section's fourth paragraph for post and OBO to review.

      Relevant sentence: *"However, in memos documenting the results of trip reports and fire safety inspections conducted by OBO's Office of Fire Protection, officials have specifically highlighted the issue of fire alarm control panels not*

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transmitting data to Post One as an outstanding deficiency to be addressed in several new buildings on the Embassy Kabul compound."

- OBO requests that OIG clarify their understanding of Post One as a communications center. According to National Fire Protection Association (NFPA) 72-3.3.53, *Communications Center*, the definition of a communications center is:

  > *A building or portion of a building that is specifically configured for the primary purpose of providing emergency communications services or public safety answering point (PSAP) services to one or more public safety agencies under the authority or authorities having jurisdiction* [1221, 2013] (SIG-PRS).

  OBO/OPS/FIR notes that the Department does not have communication centers, as defined above, established at each mission.

Factual Corrections:

1. **Summary of Review, first paragraph**: *"The Office of Inspector General (OIG) was alerted to potential risks for personnel and property due to the improper installation of the embassy's fire alarm system."*

   OBO requests the OIG identify the potential risk for personnel in light of the fact that no fire alarm notification systems were out of service within any building at any point in time.

2. **Summary of Review, third paragraph**: *"As a consequence of the damage to the fiber optic cable, control panels in eight buildings could not transmit data to Post One for more than 6 months."*

   This statement is inaccurate. Note that OBO proved that all buildings would report back to Post One using the diagram provided in the first report draft.

3. **Summary of Review, fourth paragraph**: *"OIG also found that the existing fiber optic cable network does not have a separate redundant circuit as required by Section 12.3.7 of the National Fire Protection Association (NFPA 72) code."*

   OBO notes that NFPA 72, Section 12.3.7 only defines the requirements for a Class A or Class X circuit. Additionally, NFPA 72, Section 12.1, *Application*, states that

   > *Pathways (interconnections) shall be designated based on the performance characteristics defined in this chapter. The requirements to determine the actual type [of] circuit [are] also driven by other codes and standards not [in] this chapter.*

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The section does not define the conditions under which a specific circuit is required. OBO also notes the embassy compound is still under construction, and a completed Style 7 (Class A) redundant loop is part of the current Caddell contract.

4. **Summary of Review, fourth paragraph**: *"OIG found that seven fire alarm control panels on the east side of the embassy compound are also not connected to Post One. Rather, these seven control panels are on a separate network connected to a guard post staffed by contractor security guards on the east side of the compound. Engineers in OBO's Office of Fire Protection told PAE that this configuration is inconsistent with OBO standards and that ideally all fire alarm control panels on the embassy compound should be connected to the Post One communications center."*

   This conflicts with what OBO told the OIG. OBO's engineers stated the fire alarm signal *typically* reports to Post One. They did not state it was inconsistent with OBO standards, or that it *should* report to Post One.

5. **Summary of Review, fifth paragraph**: *"According to OBO officials, because the fiber optic cable network is part of a larger project involving the construction of multiple buildings and facilities, a redundant loop is not required to be installed until the end of the entire construction project, which is currently scheduled to be completed in March 2019. Furthermore, according to OBO officials, the seven fire alarm control panels on the east side of the embassy compound are in temporary structures and therefore are not required to be connected to Post One."*

   OBO points out that network communication only impacts "control by event" functions like acknowledge, silence, and reset. These typically are not programmed into Post One for other compound buildings. Network communication also affects the MSG's ability to see compound buildings' "real time" status.

6. **Background, footnote 2**: *"Fiber optics allow for fire alarm data to be transmitted over long distances and enable a quicker response to and from the central fire command station."*

   This statement is not applicable to the Department of State. OBO notes there are only two contract fire departments in all of the State Department: Baghdad and Kabul. Even in these locations, a phone call or radio call must still be made to the fire department; the fire alarm systems do not report to a central fire command station (as is stated on the report). If there is any 'quicker response' taking place, it is only because of the mission's dedicated fire service. The fiber loop has nothing to do with it.

7. **Background, fifth paragraph**: *"OBO and the Bureau of Administration have undertaken a major office and residential expansion at the U.S. Embassy in Kabul. As part of this expansion, in June 2010, the bureaus contracted with Caddell Construction, Inc. (Caddell), to build a number of new facilities at the embassy including residential and office buildings, warehouses, parking and vehicle*

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maintenance facilities, power plants, perimeter walls, guard towers, and compound access control facilities. Caddell is required to install fire alarm systems in each of the new buildings throughout the compound as part of its contract."

This paragraph is missing crucial information. OBO notes that Caddell must also provide Style 7 (Class A) network communications, plus separate conduit paths for the risers, circuits, and network communications. Additionally, they are required to install Style 7 (Class A) circuits between buildings. Each network path (primary and redundant) must be in a separate conduit and trench. (SAQMMA-10-C-0255 – Section 13851-14 Activity 3)

8. **Results, first paragraph**: *"A fire alarm network requires a continuous circuit to function."*

   OBO notes that the circuit must be continuous between panels to function. That is true whether it is power to the panels, a network, a Single Line Circuit (SLC), or a Notification Appliance Circuit (NAC). However, it does not have to be a looped system to operate, as the OIG is stating.

9. **Results, first paragraph**: *"NFPA 72 accordingly requires pathways connecting the fire alarm control panels to be configured with a separate redundant circuit to provide survivability—an "alternate path"—in case of damage or failure to one part of the network."*

   OBO is not aware of a NFPA 72 requirement regarding a 'network' circuit. Please provide citation for the network circuit requirement.

10. **Results, second paragraph**: *"According to PAE, a secondary loop was installed. However, rather than being routed separately, the existing fiber optic cables run in a parallel path. Because the fiber optic cables run in the same direction (as opposed to opposite directions representing a redundant circuit), damage to one part of the network can render sections of the network inoperable."*

    OBO disagrees; it is perfectly acceptable for cables to run in the same direction. They cannot run in the same *conduit*. Additionally, the secondary loop is, in fact, a redundant circuit since there are two paths of travel: one from the original loop and one from the secondary loop.

11. **Results, third paragraph**: *"In addition, OIG found that fire alarm control panels in a number of embassy buildings were not connected to Post One, further compromising the functionality of the embassy's alarm system."*

    As mentioned earlier in both this response and in the teleconference, OBO requests these buildings' property ID numbers and locations. OBO notes that if these buildings are part of the temporary construction project on the east side of the compound, they

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are connected to a 24-hour, operationally-staffed Alternate Control Facility (ACF). Therefore, the buildings meet the code's intent by reporting to a central location.

12. **Results, fourth paragraph**: *"According to OBO, the seven fire alarm control panels on the east side of the embassy compound are considered temporary and therefore are not required to be connected to Post One. However, in memos documenting the results of trip reports and fire safety inspections conducted by OBO's Office of Fire Protection, officials have specifically highlighted the issue of fire alarm control panels not transmitting data to Post One as an outstanding deficiency to be addressed in several new buildings on the Embassy Kabul compound."*

    This statement is misleading. OBO officials routinely write up deficiencies during progress inspections of construction projects. This is to ensure the project director makes the contractor meet their contractual obligation. However, OBO understands the project is still under construction, and the fiber loop will be one of the last items completed.

13. **Results, fifth paragraph**: *"OIG believes the improper installation of key components of Embassy Kabul's fire alarm system needs immediate attention because of the potential safety risk to personnel and property."*

    OBO disagrees, citing flaws in this inspection's scope and with the OIG's underlying assumptions.

OIG Recommendation 1: OIG recommends that Embassy Kabul, in coordination with the Bureau of Overseas Buildings Operations' Office of Fire Protection, take immediate action to establish a separate redundant circuit for the fire alarm system that will allow operational capability to continue in the event of damage to all or part of the network, in accordance with National Fire Protection Association (NFPA 72) requirements.

OBO Response, February 2018: OBO does not concur with this recommendation. A separate redundant "network" circuit is not required by NFPA 72. Furthermore, disruption of communication across a "network" does not diminish or degrade the individual operations of a Fire Alarm Control Unit (FACU). Additionally, the conditions presented by the OIG do not require "immediate action."

OIG Recommendation 2: OIG recommends that Embassy Kabul, in coordination with the Bureau of Overseas Buildings Operations Office of Fire Protection, take immediate action to determine whether the seven fire alarm control panels currently connected to a guard post on the east side of the embassy compound should instead be connected to Post One and take appropriate action to correct all identified deficiencies.

OBO Response, February 2018: As explained previously, all required fire alarm coverage is currently provided to individual buildings, and a means is in place for alarms to notify the fire department. As long as the ACF is staffed 24 hours a day, OBO/OPS/FIR (as the Authority Having Jurisdiction) approves this configuration until all new construction is

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completed and the temporary facilities are decommissioned. Please note the following language from NFPA 72, 3.3.105.4.1, Building Fire Alarm System:

> ***A protected premises fire alarm system that includes any of the features identified in 23.3.3.1 and that serves the general fire alarm needs of a building or buildings and that provides fire department or occupant notification or both. (SIG-PRO)***

OBO points out the word "or" and maintains that, per this regulation, fire alarm systems are not required to notify the fire department.

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

In addition to providing comments related to the recommendations offered in the report, the Bureau of Overseas Buildings Operations (OBO) provided general and technical comments concerning the audit report's findings. OIG considered each of the comments and made changes in the report when appropriate. OIG's reply to OBO's general and technical comments are presented below.

OBO's General Comments

OBO stated that OIG did not comply with its request for information or edits made to the draft report during a meeting held on January 10, 2018, to discuss the audit report's findings and recommendations. OBO also stated that the "OIG audit team did not include personnel with sufficient understanding of fire code interpretation." OBO asked OIG to provide 1) the property identification numbers and locations of the eight buildings affected by the damaged fiber optic cable, 2) photographs of the damaged fiber optic cable, 3) the methodology OIG used to confirm that the existing fiber optic cable network does not have a redundant circuit, 4) verification of the existence of memoranda documenting the results of trip reports and fire safety inspections conducted by OBO's Office of Fire Protection, and 5) clarification regarding OIG's understanding of Post One as a communication center.

OIG's Reply

OIG disagrees with OBO's account of the January 2018 meeting. First, OBO made no requests at the January 2018 meeting for additional information from OIG regarding any details presented in this report. Second, OIG explained that suggested edits offered by OBO would only be made in the report when OBO provided documentation supporting the change. OBO elected not to provide any documentation, and therefore changes were not made. With respect to OBO's claim regarding a lack of "sufficient understanding of fire code interpretation," OIG consulted with PAE technicians who hold Level III and IV Fire Alarm Systems certifications from the National Institute for Certification in Engineering Technologies (NICET).[8] PAE technicians also consulted with

[8] The NICET Level III Certification requires a minimum of 5 years of experience in fire detection and signaling and 33 months of fire alarm systems experience, including installation, maintenance, inspection, testing, commissioning, plan preparation, and code compliance review. Level IV Certification requires a minimum of 10 years of experience in fire detection and signaling and 45 months experience in fire alarm systems. The NICET Fire Alarms Systems certification program was designed for engineering technicians working in the fire alarm industry who engage in a combination of the following fire alarm systems activities: system layout (plan preparation), system equipment selection, system installation, system acceptance testing, system trouble-shooting, system servicing, and system technical sales. Technical areas covered include applicable codes and standards, types of detectors and signaling systems, supervision requirements, power requirements, building/space structure and occupancy considerations, and basic electricity and electronics.

officials from OBO's Office of Fire Protection regarding the issues outlined in this report. Additionally, in a January 2018 meeting to discuss the draft report, OIG conferred with personnel from OBO's Office of Fire Protection. As noted previously, this office is responsible for ensuring the Department's adherence to fire codes and standards, and its Director is designated as the Authority Having Jurisdiction for fire protection. The Authority Having Jurisdiction is responsible for the commissioning and acceptance of all fire protection systems in New Embassy or Consulate Compounds and renovation projects. Both the Director of OBO's Office of Fire Protection as well as an OBO Fire Protection engineer participated in the meeting. Finally, OIG consulted with OIG's Senior Advisor for Construction and Contract Administration, who has over 30 years of experience with the U.S. Army Corps of Engineers serving as an Area Engineer overseeing construction projects worldwide. Additionally, he served as a certified building inspector and has worked extensively with the various NFPA fire codes.

As for the additional information now requested by OBO, OIG has addressed each point below.

With respect to the property identification numbers and locations requested by OBO in its response to a draft of this report, OIG elected not to include exact property locations in this report but can provide the information to OBO upon request.

Regarding OBO's request for detailed photographs of the damage cable, OIG reiterates that PAE, Embassy Kabul Facility Management personnel, OBO's Office of Fire Protection, and other senior OBO officials acknowledged that underground fiber optic cables were accidentally cut by a construction worker in July 2017. Moreover, in a November 2017 meeting with OIG and at the January 2018 meeting to discuss the findings outlined in this report, Embassy Kabul Facility Managers acknowledged the damage. In addition, senior OBO officials also acknowledged the damage to the fiber optic cable and stated that the break was repaired following receipt of OIG's draft report. Furthermore, on January 18, 2018, OBO sent OIG an email that noted, "the fiber optic cable break was repaired. Facilities Management [U.S. Embassy] Kabul verified functionality of the repair by conducting a test that confirmed communication with the main fire alarm panel located at the [New Office Building (NOB)] and all buildings affected by the break." In short, it is unclear why OBO is seeking photographic evidence given that the information cited above confirms that OBO was both aware of the damage and confirmed its repair.

OBO also requested that OIG provide the methodology used to establish that the existing fiber optic cable network does not have a redundant circuit. PAE fire technicians first informed OIG during the audit that a redundant path had not been installed. During a January 2018 meeting to discuss the findings outlined in this report, OBO officials also acknowledged that a redundant path had not been installed and added that the redundant path would not be completed until the end of Caddell's construction contract, which is currently projected to end by March 2019. Because the installation of additional fiber optic cabling is included in the scope of work for the current construction contract, OBO has taken the position that the redundant path is not required to be completed until the end of the contract. As noted previously, however, OIG is concerned that OBO has postponed full compliance with NFPA 72 standards for 8 years while the embassy is under construction. The absence of a redundant path means that there is no

mechanism to provide survivability in case of damage or failure to one part of the network while the embassy is under construction.

In response to OBO's request that OIG provide information regarding the results of inspections conducted by OBO's Office of Fire Protection, OIG provides the following:

- In a trip report dated June 7, 2015 sent to the OBO Project Director in Kabul, OBO's Office of Fire Protection noted that "[t]he SDA-1 fire alarm system is required to be networked via fiber to Post One."

- In another memorandum dated February 13, 2016, the Director of OBO's Office of Fire Protection discussed the planned occupancy of the Kabul warehouse, noting that "there is a deficiency that exists with the new fire alarm panel not reporting to Post One. A mitigation strategy is currently being worked with Facilities Management and the contractor. As an interim measure this panel must be checked weekly for any trouble conditions until the mitigation is completed and verified by my office."

These inspection documents confirm that, according to OBO's own requirements, fire alarm control panels in buildings on the Embassy Kabul compound should be connected to Post One. OIG also notes that, elsewhere in its technical comments, OBO states that, "OBO officials routinely write up deficiencies during progress inspections of construction projects. *This is to ensure the project director makes the contractor meet their contractual obligation* [emphasis added]." Consistent with the results of OBO's prior fire safety inspections and OBO's acknowledgement of its ongoing efforts to ensure that the contractor meets contractual obligations, OIG emphasizes that the failure to ensure that all buildings are connected to Post One is a deficiency that should be immediately addressed.

Finally, OBO requested clarification regarding OIG's understanding of Post One as a communication center. OIG's understanding is based on the Department's own description. Specifically, according to the Department's public website: "Marine Security Guards … stand duty 24 hours each day, [7] days a week, at U.S. embassies and consulates worldwide. They staff the all-important Post One communications center at our embassies, thereby ensuring vital emergency communications are properly routed during times of emergency or heightened alert."[9]

OBO's Technical Comment 1

OBO requested that "OIG identify the potential risk for personnel in light of the fact that no fire alarm notification systems were out of service within any building at any point in time."

[9] https://www.state.gov/m/ds/rls/c17244.htm (last visited March 3, 2018).

OIG's Reply

When a fire emergency occurs at any building on the embassy compound, Post One should to be alerted through the network of fire alarm control panels. Post One, in turn, alerts the embassy fire department and other emergency response personnel and remains cognizant of the response until resolved. However, as reported, seven fire alarm control panels on the east side of the embassy compound are currently not connected to Post One. OIG continues to believe that these buildings should be connected to Post One because any delay in the fire department's response to a fire emergency could adversely affect the safety of personnel occupying the buildings involved. Further, the absence of a redundant path means that there is no mechanism to provide survivability in case of damage or failure to one part of the network. This, again, could delay communications between fire alarm control panels and the central fire command center (Post One) when responding to a fire emergency. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment 2

OBO disagreed with OIG's conclusion that, "*as a consequence of the damage to the fiber optic cable, control panels in eight buildings could not transmit data to Post One for more than 6 months*." OBO contended that this is "inaccurate" and stated that, according to the diagram that OIG included in a previous draft, all buildings would in fact report to Post One.

OIG's Reply

In July 2017, underground fiber optic cables on the west side of the embassy compound were accidentally cut by a construction worker. Because a redundant path has not been established on the embassy compound, fire alarm control panels in eight buildings could not transmit data to Post One for more than 6 months as a consequence of the damage. Both PAE and embassy facility managers confirmed that the damage to the fiber optic cables interrupted communication between the eight affected buildings and Post One. Communication to the eight affected buildings was not restored until January 2018 when the break was repaired. This was confirmed in an email from OBO to OIG in January 2018 that noted, "The fiber optic cable break was repaired. Facilities managers in Kabul verified functionality of the repair by conducting a test that confirmed communication with the main fire alarm panel located at the NOB and all buildings affected by the break."

As OIG explained in the original draft of this report, the diagram included in that draft did not represent the fiber optic network currently installed on the embassy compound. Rather, the diagram represented what a *proper* redundant path would have looked like had it been installed on the embassy compound, as required by NFPA 72. To avoid any potential confusion, however, OIG removed the diagram from the report. OIG made no further changes to the report on the basis of this comment.

OBO's Technical Comment 3

OBO disagreed with OIG's statement that "*existing fiber optic cable network does not have a separate redundant circuit as required by Section 12.3.7 of the [NFPA] 72 code*." OBO argued instead that that the code does not define the conditions under which a specific circuit is required. OBO further stated that the embassy compound is still under construction and a completed Style 7 (Class A) redundant loop is part of the current Caddell contract.

OIG's Reply

OIG reiterates that the existing fiber optic cable network on post does not have a separate redundant path as required by NFPA. The NFPA section at issue identifies the required characteristics of that circuit. In particular, NFPA 72 Section 12.3.1 requires Class A pathways to include a redundant path. Specifically, NFPA 72 Section 12.3.1 states that a pathway is designated as Class A when "[i]t includes a redundant path." Moreover, NFPA 72 Section 12.3.7 addresses installation requirements. As presented in the audit report, NFPA 72 Section 12.3.7 states that "Class A and Class X circuits using physical conductors (e.g., metallic, optical fiber) shall be installed such that the outgoing and return conductors, exiting from and returning to the control unit, respectively, are routed separately." Moreover, as OBO acknowledges, in addition to NFPA standards, the Caddell contract itself specifies the requirement for a redundant path. Notwithstanding these requirements, OBO states that it will not require Caddell to install a redundant loop until completion of the construction project in March 2019. OIG added a reference to NFPA 72 Section 12.3.1 in the report on the basis of this comment.

OBO's Technical Comment 4

OBO disagreed with OIG's statement that "*Engineers in OBO's Office of Fire Protection told PAE that this configuration is inconsistent with OBO standards and that ideally all fire alarm control panels on the embassy compound should be connected to the Post One communication center*." Rather, OBO stated that it told OIG that the fire alarm signal *typically* reports to Post One, not that it *should*. OBO also stated that its engineers did not tell OIG that the configuration was inconsistent with OBO standards.

OIG's Reply

In addition to information provided by PAE and OBO's Office of Fire Protection, OIG also referenced inspections completed by OBO's Office of Fire Protection to substantiate its position. In particular, OIG obtained several memoranda corroborating the fact that fire alarm control panels in buildings on the Embassy Kabul compound should be connected to Post One. Specifically, in a June 2015 inspection report sent to the OBO Project Director in Kabul, OBO's Office of Fire Protection noted, "The SDA-1 fire alarm system is required to be networked via fiber to Post One." Additionally, in a February 2016 memorandum to the OBO Construction Management Office Director that discussed the planned occupancy of the Kabul warehouse, the Director of OBO's Office of Fire Protection stated, "there is a deficiency that exists with the new

fire alarm panel not reporting to Post One. A mitigation strategy is currently being worked with Facilities Management and the contractor. As an interim measure this panel must be checked weekly for any trouble conditions until the mitigation is completed and verified by my office." These memoranda document deficiencies that OBO's Office of Fire Protection found during inspections and demonstrate the intent to have direct communication between individual fire alarm control panels and Post One. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment 5

OBO offered clarity on OIG's statement: "*According to OBO officials, because the fiber optic cable network is part of a larger project involving the construction of multiple buildings and facilities, a redundant loop is not required to be installed until the end of the entire construction project, which is currently scheduled to be completed in March 2019. Furthermore, according to OBO officials, the seven fire alarm control panels on the east side of the embassy compound are in temporary structures and therefore are not required to be connected to Post One.*"

OIG's Reply

According to NFPA 72 (sections 12.3.1 and 12.3.7), a separate redundant path for the fire alarm system is required. The NFPA codes and standards are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation around the world, and the contractual provisions reiterate the importance of these standards. Failure to comply with these requirements presents a potential risk to embassy personnel and property. Therefore, noncompliance with NFPA warrants the prompt attention of OBO management. In addition, the contract with Caddell requires that a separate redundant path be installed in accordance with NFPA. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment 6

OBO disagreed with OIG's statement that "*fiber optics allow for fire alarm data to be transmitted over long distances and enable a quicker response to and from the central fire command station*." OBO indicated that this statement is not applicable to the Department. In addition, OBO stated that, of all U.S. embassies, only those in Kabul and Baghdad have contract fire departments. Even at these two posts, OBO stated that "a phone call or radio call must still be made to the fire department; the fire alarm systems do not report to a central fire command station (as is stated in the report)." OBO added that, "if there is any 'quicker response' taking place, it is only because of the mission's dedicated fire service."

OIG's Reply

OIG included this general, descriptive sentence regarding fiber optics to help the reader understand the advantage of deploying fiber optic cables, which are being used at Embassy

Kabul. It is therefore applicable to this report. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment 7

OBO stated that OIG's summary of the Caddell contract requirements lacked key information. Specifically, OBO stated that "Caddell must provide Style 7 (Class A) network communications, plus separate conduit paths for the risers, circuits, and network communications. Additionally, Caddell is required to install Style 7 (Class A) circuits between buildings. Each network path (primary and redundant) must be in a separate conduit and trench."

OIG's Reply

OIG appreciates the additional details provided by OBO in its response to a draft of this report. For example, as OBO points out, Caddell's contract requires each network path to be in a separate conduit and trench. However, in some cases, fiber optic cables currently in use at Embassy Kabul are bundled together in the same conduit. Accordingly, OIG added this information into the report as appropriate.

OBO's Technical Comment 8

With regard to OIG's statement that "*a fire alarm network requires a continuous circuit to function*," OBO stated that "the circuit must be continuous between panels to function. That is true whether it is power to the panels, a network, a Single Line Circuit, or a Notification Appliance Circuit. However, it does not have to be a looped system to operate, as the OIG is stating."

OIG's Reply

NFPA 72 requires a redundant path for Class A circuits. Because it appears that the word "loop" is causing confusion, OIG replaced the word "loop" with the word "path" throughout the report. In addition, OIG added a diagram explaining the precise nature of its concerns. Regardless, as outlined below on page 25, the fiber optic cables currently in use at Embassy Kabul are bundled together in the same conduit, which is contrary to NFPA standards. As a result, any damage to one part of the network can render sections of the network inoperable. As OIG reported, OBO must address this condition.

OBO's Technical Comment 9

OBO requested that OIG provide support for its statement: "*NFPA 72 accordingly requires pathways connecting the fire alarm control panels to be configured with a separate redundant circuit to provide survivability—an alternate path—in case of damage or failure to one part of the network*." OBO stated that it was "not aware of a NFPA 72 requirement regarding a 'network' circuit."

OIG's Reply

According to NFPA 12.3.7, Class A and Class X circuits using physical conductors (e.g., metallic and optical fiber) "shall be installed such that the outgoing and return conductors, exiting from and returning to the control unit, respectively, are routed separately." To avoid confusion regarding the term "circuit," OIG replaced the word "circuit" with the word "path" throughout the report when referencing NFPA requirements regarding a redundant path.

OBO's Technical Comment 10

OBO disagreed with OIG's statement: "*According to PAE, a secondary loop was installed. However, rather than being routed separately, the existing fiber optic cables run in a parallel path. Because the fiber optic cables run in the same direction (as opposed to opposite directions representing a redundant circuit), damage to one part of the network can render sections of the network inoperable*." OBO stated that "it is perfectly acceptable for cables to run in the same direction. They cannot run in the same *conduit*. Additionally, the secondary loop is, in fact, a redundant circuit since there are two paths of travel one from the original loop and one from the secondary loop."

OIG's Reply

OIG agrees that cables can run in the same direction but cannot run in the same conduit. OIG found, however, that a number of the runs currently installed at Embassy Kabul did, in fact, have fiber optic cables bundled together in the same conduit. The photo below shows the current configuration at Embassy Kabul in which fiber optic cables are bundled together in the same conduit. This is contrary to NFPA standards for a redundant path. OIG made no changes to the report on the basis of this comment.

Figure 2: Fiber optic cables bundled together in the same conduit.
Source: Photo taken by OIG on February 20, 2018.

OBO's Technical Comment 11

OBO requested that OIG provide the property identification numbers and locations of the buildings referenced in OIG's statement: "*In addition, OIG found that fire alarm control panels in a number of embassy buildings were not connected to Post One, further compromising the functionality of the embassy's alarm system*." OBO stated that "if these buildings are part of the temporary construction project on the east side of the compound, they are connected to a 24-hour, operationally-staffed Alternate Control Facility (ACF). Therefore, the buildings meet the code's intent by reporting to a central location."

OIG's Reply

The affected buildings include seven residential and office facilities located on the east side of the embassy compound. As noted previously, a number of the buildings have been occupied by embassy personnel since Caddell began construction in 2011. Therefore, these "temporary" buildings have not been connected to Post One for 7 years. NFPA defines a permanent structure as "a building or structure that is intended to remain in place for a period of more than 180 days in any consecutive 12-month period."[10] Applying that definition, these buildings should be considered permanent structures and, consequently, their fire alarm panels should be connected to Post One. OIG made no changes to the report on the basis of this comment.

OBO's Technical Comment 12

OBO stated that OIG's statement "…*in memos documenting the results of trip reports and fire safety inspections conducted by OBO's Office of Fire Protection, officials have specifically highlighted the issue of fire alarm control panels not transmitting data to Post One as an outstanding deficiency to be addressed in several new buildings on the Embassy Kabul compound*" is misleading. OBO stated that its "officials routinely write up deficiencies during progress inspections of construction projects. This is to ensure the project director makes the contractor meet their contractual obligation. However, OBO understands the project is still under construction, and the fiber loop will be one of the last items completed."

OIG's Reply

OIG used the results of OBO's inspection reports to corroborate its findings relating to compliance with contract requirements, industry standards and codes, and Department guidance. The fact that OBO may identify these deficiencies as part of a process to ensure that the contractor meets its obligations does not mean that those deficiencies are necessarily irrelevant or harmless during the construction process. OIG made no changes to the report on the basis of this comment.

[10] NFPA 101,"Life Safety Code," Section 3.3.271.8 (2012).

OBO's Technical Comment 13

OBO disagreed with OIG's conclusion that "*the improper installation of key components of Embassy Kabul's fire alarm system needs immediate attention because of the potential safety risk to personnel and property*." OBO stated that it disagreed with OIG's underlying assumptions and that OIG's scope contained flaws.

OIG's Reply

As set forth in this report, OBO is not in compliance with NFPA 72 regarding the requirement for a redundant path. In addition, a number of the runs currently installed at Embassy Kabul have fiber optic cables bundled together in the same conduit, which similarly fails to comply with NFPA 72. The NFPA codes and standards are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation around the world. Failure to adhere to these requirements thus presents potential risk to embassy personnel and property. Therefore, the improper installation of key components of Embassy Kabul's fire alarm system requires immediate attention. OIG made no changes to the report on the basis of this comment.

OIG AUDIT TEAM MEMBERS

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

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

Margaret Hardy, Senior Auditor
Middle East Region Operations
Office of Audits

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