

SIGAR

Special Inspector General for Afghanistan Reconstruction

WHAT SIGAR REVIEWED

In April 2013, the Afghan Ministry of Energy and Water (MEW) and the Asian Development Bank (ADB) developed the \$10 billion Afghanistan Power Sector Master Plan. The North East Power System (NEPS), which is part of the plan, is intended to expand the high-voltage power system in Afghanistan. NEPS consists of four phases. This report focuses on phase I (referred to as NEPS I), which is expected to provide electricity to about 30,000 Afghans in Kabul and Logar provinces.

In 2012, the U.S. Army Corps of Engineers (USACE) awarded a \$60.7 million firm-fixed-price contract to State Corps Limited (SCL) to design and construct NEPS I but terminated that contract for default in December 2013. In August 2014, USACE awarded a \$39.5 million firm-fixed-price contract to Assist Consultants Incorporated (ACI) to design and construct a new power substation at Pul-e-Alam, 247 transmission towers, and 44 miles of 220 kV power transmission lines from the Arghandi substation to the new Pul-e-Alam substation. U.S. Forces-Afghanistan transferred the transmission towers and lines, and the Pul-e-Alam substation to the Afghan government in January and August 2018, respectively, at which point the government assumed full responsibility for operating and maintaining the system. The 1-year warranty for the transmission towers and lines expired in January 2019, while the warranty for the substation expires in August 2019.

The objectives of this inspection were to determine whether NEPS I (1) was constructed in accordance with contract requirements and applicable construction standards, and (2) is being used.

August 2019

Afghanistan's North East Power System Phase I: USACE's Construction Deficiencies, Contractor Noncompliance, and Poor Oversight Resulted in a System that May Not Operate Safely or At Planned Levels

SIGAR 19-50 INSPECTION REPORT

WHAT SIGAR FOUND

In July 2018, SIGAR conducted site visits to 21 of the 247 NEPS I transmission towers and the Pul-e-Alam substation, and in August 2018, interviewed 26 private landowners living along the transmission line route. SIGAR found that ACI had completed the transmission towers and lines and built the Pul-e-Alam substation. However, SIGAR found four instances of contract noncompliance, which increase safety risks for Afghans living along the transmission route and working at the Pul-e-Alam substation:

1. USACE allowed ACI to proceed with NEPS I's construction before the Afghan government had (1) determined whether 40 percent of the land required for the project was government or privately owned, and (2) purchased or acquired rights-of-way to the privately owned land along the system's transmission route, in violation of contract requirements.
2. The concrete foundations for 17 of the 21 towers were damaged due to ACI's poor workmanship.
3. ACI did not properly compact the soil around the foundation of one of the transmission towers SIGAR inspected, resulting in soil cracked as much as 3.5 inches wide. This could cause the tower to collapse.
4. ACI installed noncertified fire doors in the Pul-e-Alam substation, all of which lacked a manufacturer's label with the required safety information.

SIGAR found that USACE conducted poor oversight of the NEPS I project. USACE did not document these construction deficiencies or confirm that ACI corrected them during its three-phase inspection process, which was intended to ensure that contractors comply with contract requirements. Another key element of USACE's quality assurance effort are daily reports prepared by its local national quality assurance personnel. SIGAR found four instances where a local national quality assurance official identified ACI's use of deficient concrete during construction and reported to USACE that the concrete was not acceptable. However, SIGAR did not find any record that USACE included the concrete issue in its reporting on NEPS I's deficiencies or that the concrete was repaired. Lastly, USACE did not provide evidence to show that NEPS I has been tested at its maximum power capacity as the contract required. As a result, it is not known whether there are defects in the system or if it will function safely and as intended.

USACE reported that NEPS I was distributing power to Afghans, but neither the MEW nor DABS could provide information on how much power NEPS I is transmitting or how many Afghans are being served. NEPS I, if fully operational, is designed to distribute up to 32 MW of electricity to its customers. However, according to DABS officials, only about 7 MW of electricity is available to be distributed to customers from the Pul-e-Alam substation. In addition, it is not clear whether a new ADB project originating in Turkmenistan that is designed to provide additional electricity will be sufficient to operate NEPS I and other U.S. government-funded electrical projects, as intended.

WHAT SIGAR RECOMMENDS

To protect the U.S. taxpayers' investment in NEPS I, and enhance safety for Afghans living near NEPS I, SIGAR recommends that the USACE Commanding General and Chief of Engineers:

1. **Work with the Afghan Ministry of Energy and Water (MEW) to ensure that the Afghan government has developed plans to**
 - a. **determine ownership of undocumented land along the NEPS I transmission line,**
 - b. **obtain the legal right to access all land required for the operation and maintenance of the NEPS I transmission line, and**
 - c. **address dangers posed by transmission lines running near residences and other structures.**
2. **Work with the MEW to issue notices to residents living along the NEPS I transmission line route, informing them of the safety hazards associated with living within the clear zone along the transmission lines, and include guidance about how to deal with emergencies involving the lines that could occur.**
3. **Work with the MEW to examine all of the transmission towers to ensure that the concrete and soil compaction were completed in accordance with the contract and develop corrective actions for the ministry to consider taking if a tower foundation is noncompliant.**
4. **Direct ACI to replace the noncompliant fire doors or seek reimbursement from ACI for any price difference, before the warranty expires in August 2019.**

In its comments on a draft of this report, USACE generally disagreed with the SIGAR's "comments and conclusions." In addition, USACE did not concur with any of SIGAR's four recommendations.

Regarding recommendations 1a and 1b, USACE stated that it follows the NATO Training Mission–Afghanistan and Combined Security Transition Command–Afghanistan's procedures to ensure that the Afghan government provides legal authority to the U.S. government to design and construct facilities on public and private land. USACE also cited a license the Afghan government gave the U.S. government to construct on public land the Afghan government owns or has the right to use. However, SIGAR's findings associated with these recommendations related to rights to access land for which ownership could not be determined and private land which the Afghan government has not yet purchased or acquired the right to use. USACE stated that it was not responsible for implementing the actions in recommendations 1c and 2, and disagreed that ACI's work cited in recommendations 3 and 4 did not comply with the contract.

However, SIGAR did not find any of the information that USACE provided sufficient to remove these recommendations from the report. As a result, all four recommendations remain open.



SIGAR

Office of the Special Inspector General
for Afghanistan Reconstruction

August 12, 2019

The Honorable Dr. Mark T. Esper
Secretary of Defense

General Kenneth F. McKenzie Jr.
Commander, U.S. Central Command

General Austin Scott Miller
Commander, U.S. Forces–Afghanistan and
Commander, Resolute Support

Lieutenant General Todd T. Semonite
Commanding General and Chief of Engineers
U.S. Army Corps of Engineers

This report discusses the results of SIGAR’s inspection of the North East Power System phase I (NEPS I), which is intended to provide electricity to about 30,000 Afghans in Kabul and Logar provinces. In August 2014, the U.S. Army Corps of Engineers (USACE) awarded a \$39.5 million firm-fixed-price contract to Assist Consultants Incorporated (ACI), an Afghan company, to complete NEPS I. The contract required ACI to design and construct 247 transmission towers, 44 miles of 220 kV power transmission lines from the Arghandi substation in Kabul province to Pul-e-Alam in Logar province, and a new power substation at Pul-e-Alam. NEPS I was designed to distribute up to 32 MW of electricity to its customers.

During our July 2018 site visits, we found that ACI had completed the construction of the NEPS I system. However, USACE allowed ACI to proceed with the construction before the Afghan government had (1) determined whether 40 percent of the land required for the project was government or privately owned, and (2) purchased or acquired rights-of-way to the privately owned land along the system’s transmission route, in violation of contract requirements. We also found tower foundations with damaged concrete and one with improperly compacted soil, the results of ACI’s poor workmanship. In addition, ACI installed noncompliant fire doors in the Pul-e-Alam substation. The primary reason for these deficiencies is USACE’s inadequate project oversight. Further, USACE has not provided us with evidence that NEPS I has been tested to full-load, which is necessary to identify any system defects and ensure that the system will function safely and as intended.

The Afghan government has been fully responsible for operating and maintaining the NEPS I system since U.S. Forces–Afghanistan transferred the Pul-e-Alam substation, the final component of the project, to it in May 2018. According to USACE, NEPS I has been energized and is being used to provide electricity to residents and businesses in Kabul and Logar provinces. However, the amount of power currently available for NEPS I—at most 7 MW according to DABS officials—may not be sufficient to distribute electricity to all 30,000 Afghans it was designed to serve. Further, it is not clear whether a new electrical project designed to provide additional power to NEPS I—a 500 kV transmission line originating in Turkmenistan—will be sufficient to operate NEPS I or other U.S. funded projects, at full capacity.

We are making four recommendations in this report. We recommend that the USACE Commanding General and Chief of Engineers: (1) work with the Ministry of Energy and Water (MEW) to ensure the Afghan government has developed plans to (a) determine ownership of undocumented land along the NEPS I transmission line, (b) obtain the legal right to access all land required for the operation and maintenance of the NEPS I transmission



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line, and (c) address dangers posed by transmission lines running near residences and other structures; (2) work with the MEW to issue notices to residents living along the NEPS I transmission line route, informing them of the safety hazards associated with living within the clear zone along the transmission lines, and include guidance about how to deal with emergencies involving the lines that could occur; (3) work with the MEW to examine all of the transmission towers to ensure that the concrete and soil compaction were completed in accordance with the contract and develop corrective actions for the ministry to consider taking if a tower foundation is noncompliant; and (4) direct ACI to replace the non-compliant fire doors or seek reimbursement from ACI for any price difference, before the warranty expires in August 2019.

We received written comments on a draft of this report from USACE, which are reproduced in appendix II. USACE generally disagreed with the report's "comments and conclusions." In addition, USACE did not concur with any of the four recommendations. Regarding recommendations 1a and 1b, USACE stated that it follows the NATO Training Mission–Afghanistan and Combined Security Transition Command–Afghanistan's procedures to ensure that the Afghan government provides legal authority to the U.S. government to design and construct facilities on public and private land. USACE also cited a license the Afghan government gave the U.S. government to construct on public land the Afghan government owns or has the right to use. However, our findings associated with these recommendations related to rights to access land for which ownership could not be determined and private land which the Afghan government has not yet purchased or acquired the right to use. USACE stated that it was not responsible for implementing the actions in recommendations 1c and 2, and disagreed that ACI's work cited in recommendations 3 and 4 did not comply with the contract. However, we did not find any of the information that USACE provided sufficient to remove the recommendations from the report. As a result, all four recommendations remain open. USACE also provided technical comments, which we incorporated into this report, as appropriate.

SIGAR conducted this work under the authority of Public Law No. 110-181, as amended, and the Inspector General Act of 1978, as amended, and in accordance with the *Quality Standards for Inspection and Evaluation*, published by the Council of the Inspectors General on Integrity and Efficiency.

A handwritten signature in black ink, appearing to read "John F. Sopko".

John F. Sopko
Special Inspector General
for Afghanistan Reconstruction

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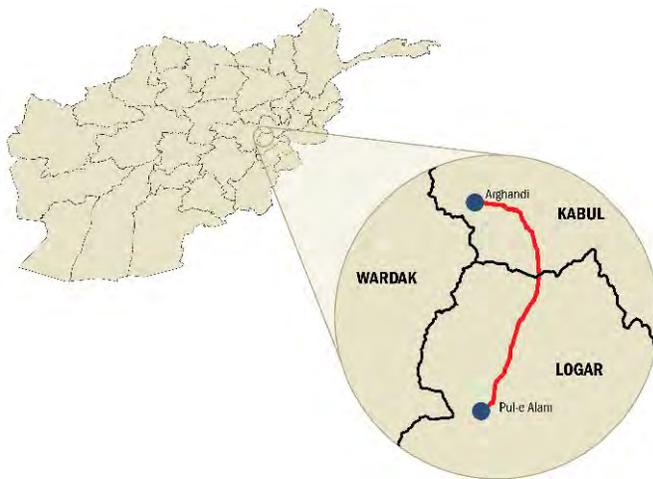
ABBREVIATIONS

ACI	Assist Consultants Incorporated
ADB	Asian Development Bank
DABS	Da Afghanistan Breshna Sherkat
DFOW	definable feature of work
FAR	Federal Acquisition Regulation
MEW	Ministry of Energy and Water
PPSA	power purchasing and sales agreement
NEPS	North East Power System
SCL	State Corps Limited
USACE	U.S. Army Corps of Engineers

In April 2013, the Afghan Ministry of Energy and Water (MEW) and the Asian Development Bank (ADB) developed the Afghanistan Power Sector Master Plan. This \$10 billion plan to provide power throughout Afghanistan involves multiple U.S. government-funded projects, including the Kajaki Hydro Power Project, the North East Power System (NEPS), and the Southeast Power System. NEPS, which consists of four phases, is intended to expand the high-voltage power system in Afghanistan, provide electricity to unserved population centers, and support a national grid by providing a cost-effective, reliable system to distribute electric power.

In March 2018, we reported on our inspection of NEPS phase III.¹ We found that, among other things, U.S. Army Corps of Engineers (USACE) (1) authorized the contractor to proceed with the project's construction without the Afghan government acquiring the private land or rights-of-way as required, (2) approved the contract even though it did not include provisions to connect both ends of the system to an adequate power source, and (3) accepted the project without the required testing at full capacity. We also found that the tower foundations may be structurally unsound.

Figure 1 - NEPS I Transmission Line Route from the Arghandi Substation to the Pul-e-Alam Substation



Source: SIGAR analysis of contract documents.

This report focuses on phase I, also referred to as NEPS I. According to Da Afghanistan Breshna Sherkat (DABS), the Afghan power utility company, NEPS I is expected to provide electricity to about 30,000 Afghans in Kabul and Logar provinces.²

On September 27, 2012, USACE awarded a \$60.7 million firm-fixed-price contract to State Corps Limited (SCL), an Afghan company, to design and construct NEPS I. USACE terminated this contract for default on December 2, 2013, after discovering that SCL obtained the contract through fraudulent means.³ On August 28, 2014, USACE awarded a \$39.5 million firm-fixed-price contract to Assist Consultants Incorporated (ACI), an Afghan company, to complete NEPS I.⁴ The contract required ACI to design and construct 247 transmission towers, 44 miles of 220 kV power

transmission lines from the Arghandi substation in Kabul province to Pul-e-Alam in Logar province, and a new power substation at Pul-e-Alam (see figure 1). The contract also required ACI to construct other facilities and infrastructure, such as a water system, a waste water system, and a kitchen in the Pul-e-Alam substation.⁵

¹ SIGAR, *Afghanistan's North East Power System Phase III: USACE's Mismanagement Resulted in a System that Is Not Permanently Connected to a Power Source, Has Not Been Fully Tested, and May Not Be Safe to Operate*, SIGAR 18-37-IP, March 30, 2018.

² DABS operates and manages Afghanistan's domestic power generation, as well as power importation, transmission, and distribution. DABS is owned by shareholders, which include the Ministry of Finance, the MEW, the Ministry of Economy, and the Ministry of Urban Planning and Development.

³ According to Department of Defense officials, this and other SCL contracts in Afghanistan were determined to be invalid because the company made false representations concerning its experience. USACE paid SCL \$6.2 million for work completed before the contract was terminated.

⁴ U.S. Forces-Afghanistan funded the contract through the Afghanistan Infrastructure Fund.

⁵ The cost difference between the SCL and ACI contracts to finish the project is due primarily to differences in the prices to construct the 220 kV transmission lines and the Pul-e-Alam substation. Specifically, the SCL contract specified a cost of

U.S. Forces–Afghanistan accepted the project from USACE and transferred the transmission towers and lines to the Afghan government in January 2018, and the Pul-e-Alam substation in May 2018. At this point, the Afghan government assumed full responsibility for operating and maintaining the system. The 1-year warranty for the transmission towers and lines expired in January 2019, while the warranty for the substation expired in May 2019.

The objectives of this inspection were to determine the extent to which NEPS I (1) was completed according to contract requirements and applicable construction standards, and (2) is being used.

We conducted our work in Kabul and Bagram, Afghanistan, and at various locations along NEPS I from October 2017 to August 2019, in accordance with the *Quality Standards for Inspection and Evaluation*, published by the Council of the Inspectors General on Integrity and Efficiency. The engineering assessment was conducted by our professional engineers in accordance with the National Society of Professional Engineers' *Code of Ethics for Engineers*. Appendix I contains a detailed discussion of our scope and methodology.

ACI'S NONCOMPLIANCE WITH THE CONTRACT, CONSTRUCTION DEFICIENCIES, AND USACE'S POOR OVERSIGHT HAVE CREATED INCREASED SAFETY RISKS FOR AFGHAN RESIDENTS AND EMPLOYEES AT THE PUL-E-ALAM SUBSTATION

During our July 2018 site visits, we found that ACI had completed the NEPS I transmission towers and lines, and had built the Pul-e-Alam substation.⁶ However, we found that USACE allowed ACI to proceed with the NEPS I construction before the Afghan government had determined whether 40 percent of land required for the project was government or privately owned, and had purchased or acquired rights-of-way to privately owned land along the system's transmission route, in violation of contract requirements. In addition, ACI did not clear the land along the transmission route as required. We found poor workmanship in the construction of transmission tower foundations and inadequate compaction of soil around one of the transmission towers we inspected. In addition, ACI installed noncompliant fire doors in the Pul-e-Alam substation, which could leave occupants at risk in the event of a fire. USACE's poor oversight was the primary reason for these construction deficiencies. Further, although we requested several times since May 2018, USACE has not provided us documentation supporting that the NEPS I system has been tested at its maximum capacity as required and will operate as intended when fully energized.

The Afghan Government Did Not Consistently Clear or Acquire the Right to Access Privately Owned Land Before NEPS I, Putting Afghans Living Along the Transmission Route at Risk

USACE Approved Construction to Begin Before the MEW Determined Ownership of the Required Land or Acquired the Right to Access the Privately Owned Land Along the Transmission Line Route

The NEPS I contract stated that USACE would not issue ACI a notice to proceed with construction until land purchase and right-of-way issues had been resolved. Further, the NEPS I Project Management Plan identified land dispute issues as a major risk area and noted that USACE would mitigate the safety risk by suspending the contract to minimize contract costs or could terminate the contract for convenience. In October 2011, prior to the NEPS I contract award, USACE and the MEW issued a memorandum of understanding stating that the Afghan government would "transfer government land affected by this project from the owning [Afghan

\$29.8 million for the transmission lines and \$29.8 million for the substation, while the ACI contract specified \$18.9 million and \$12.5 million for the transmission lines and substation, respectively, for a net decrease of \$28.2 million.

⁶ We conducted four site visits along the NEPS I transmission line route from July 23, 2018, through July 29, 2018, to examine the construction of transmission towers and lines, and the substation at Pul-e-Alam. We also conducted site visits from August 24, 2018, through August 28, 2018, to interview 26 Afghans who owned land along the route.

government] agency to DABS,” “purchase private land affected by this project from the existing land owners,” and “acquire land involuntarily if the landowner does not agree to the price set by [the Afghan government].”⁷ The memorandum of understanding also stated that the Afghan government would give the U.S. government a right-of-entry memorandum, allowing U.S. government officials and ACI to access land and begin construction once the Afghan government acquired and transferred the affected land to DABS. Although we requested several times since March 2018, USACE could not provide us a right-of-entry memorandum as required in the memorandum of understanding or other documentation showing that the Afghan government had acquired any privately owned land.

However, in October 2014, USACE issued ACI a notice to proceed with construction, followed by two clearances for construction in June 2015 and August 2015.⁸ Further, in June 2015, the MEW told ACI that it could begin construction on the NEPS I transmission towers. In June 2018, DABS officials told us that privately owned land affected by the transmission line route had not been acquired, but added that DABS had reached agreements with private landowners to compensate them for constructing transmission towers and lines on their land. According to USACE, at least 112, or about 45 percent, of the 247 NEPS I transmission towers were constructed on privately owned land.⁹ However, the land or rights-of-way for the 112 towers had not been acquired by the Afghan government, and USACE did not give us documentation showing if the land for 99, or 40 percent, of the remaining towers was government or privately owned.

In August 2018, we interviewed 26 private landowners living along the NEPS I transmission route to determine whether the Afghan government had acquired the affected land, or whether they had been compensated per their agreements with the government.¹⁰ The 26 landowners did not give us any documentation showing whether the Afghan government had purchased the affected land or acquired rights-of-way, but they all told us that the government had not compensated them for allowing the construction on their land. Twelve landowners told us that they had signed compensation agreements which stated that they would receive compensation in exchange for allowing construction on their land. When we asked about resettlement as a means of resolving land purchase and right-of-way issues, the 26 residents told us that resettlement was not offered to them.

During our review of NEPS I contract documents, we found that USACE raised land-acquisition and right-of-way issues in written correspondence to ACI on at least three occasions in 2016 and 2017, more than 2 years after USACE awarded the contract to ACI. For example:

- In an August 2016 letter, USACE officials notified ACI that it should perform a verification of property ownership along the transmission line route and provide this information to the U.S. government.
- In an October 2016 letter, USACE reiterated that ACI planned to build 66 transmission towers on privately owned land, and that land acquisition resettlement process issues were impacting tower construction.
- In a February 2017 letter, USACE asked ACI whether buildings crossed by transmission lines would be demolished and if the building owners had been made aware of the line crossings. USACE further stated that the conductors ACI installed could not be energized because the land was not cleared.¹¹

⁷ USACE and MEW, Memorandum of Understanding for request for proposal W912ER-14-C-0023, October 2011, unnumbered first page.

⁸ A notice to proceed authorizes an entity to proceed with project work. A clearance for construction notes the date that construction can begin.

⁹ USACE gave us documentation showing that 112 of the 247 transmission towers and lines constructed for NEPS I are located on privately owned land and 36 are located on government owned land. USACE did not provide us with any documentation indicating whether the remaining 99 transmission towers were on privately owned or government owned land, and officials told us they did not know who owned the land.

¹⁰ USACE gave us documentation showing that 102 landowners live near the 112 transmission towers constructed on privately owned land. Due to security concerns along the transmission line route, we could only interview 26 landowners.

¹¹ Conductors are materials, such as strands of metal wire, that allow an electrical charge to flow in one or more directions.

In July 2018, USACE officials told us that after USACE issued the October 2011 memorandum of understanding with the MEW, USACE did not take steps to verify that the Afghan government had acquired the land required for construction. The USACE officials said that when they became aware that the Afghan government had not acquired all of the affected privately owned, they did not suspend or terminate the NEPS I contract because it was their understanding that the Afghan government was in the process of acquiring the privately owned land and resolving the land ownership issues. The officials also stated that if the contract had been suspended, USACE would still have been obligated to pay ACI, which would have been prohibitively expensive. The officials stated that USACE will not award future contracts until it receives confirmation that the Afghan government owns the land, and that all buildings and agricultural land within the right-of-way have been vacated and are ready for clearance.

ACI Did Not Clear Land along the Transmission Line Route, Putting Residents and Their Property at Risk

The NEPS I contract required ACI to clear the land along the transmission line route to ensure the safety of residents living along the route. According to the contract, the land clearing consisted of removing and disposing of or demolishing trees and vegetation, houses, huts, barns, cattle sheds, and other structures within a clear zone of about 41 feet on each side of the transmission lines. This clearance helps prevent safety hazards that could result from a transmission tower or live transmission line falling, such as property damage or personal injury.

During our July 2018 site visits, we found that land had not been cleared and that transmission lines crossed land being farmed and land close to buildings (see photos 1 and 2). The 26 landowners we met with in August 2018 told us ACI informed them about the dangers associated with living under the transmission lines, but only 1 landowner told us that he was instructed on what to do in the event of a safety issue, such as a tower or transmission line falling.

Photo 1 - NEPS I Transmission Tower 128 and Lines Crossing Over Farmland and Buildings



Source: SIGAR, July 23, 2018

Photo 2 - NEPS I Transmission Tower 233 and Lines Crossing Near a Building



Source: SIGAR, July 23, 2018

In December 2017, USACE modified the NEPS I contract to de-scope the requirement for ACI to clear the land along the transmission line route. USACE officials stated that this contract modification was done because of the Afghan government's inability to acquire privately owned land or rights-of-way along the NEPS I transmission line route and to mitigate the safety risk posed to residents living along the transmission line route. The modification included provisions for ACI to disable the NEPS I system to prevent the Afghan government from operating it. These provisions included:

- grounding conductors on the first and last transmission line tower,

- grounding conductors on every 20th transmission line tower between the first and last transmission line tower,
- removing high voltage conductors from the Pul-e-Alam substation's gantries and locking them in the Pul-e-Alam substation,¹²
- locking and tagging equipment in accordance with U.S. Occupational Safety and Health Administration standards, and
- affixing warning signs to equipment that was locked away.

The modification required ACI to complete these safety provisions by December 24, 2017. On January 10, 2018, U.S. Forces–Afghanistan accepted the NEPS I towers and transmission lines and in May 2018 transferred them to the Afghan government. According to USACE officials, on January 13, 2018, DABS ungrounded the system and enabled it for operational purposes. Although we requested several times since May 2018, USACE did not provide documentation indicating that any land clearance or resident resettlement occurred. Although USACE attempted to remove safety hazards when it disabled the system, DABS reintroduced these hazards when it re-enabled the system without clearing the transmission route and put the residents living within the clear zone and their property at risk. Residents could be injured or killed, and property could be damaged if a tower collapses or transmission line falls.

Some of the Transmission Tower Foundations that ACI Constructed Had Damaged and Cracked Concrete

During our July 2018 site visits, we found that 17 of the 21 NEPS I transmission towers we inspected had damaged or cracked concrete foundations. The contract's technical specifications stated that if any section of concrete is uneven, honeycombed, discolored, or imperfect in appearance, it should be chiseled, refilled and properly resurfaced.¹³ The technical specifications also stated that all visible concrete surfaces should have a regular finish free from holes and pins. However, foundations for 9 of the 21 towers we inspected contained damaged concrete. For example, photo 3 shows the damaged concrete on the corner of one tower's foundation that has exposed one of the concrete's reinforcing steel rods. Exposure to air makes these rods susceptible to corrosion, which can compromise the concrete and cause it to fall apart. In addition, the foundations for 8 of the 21 towers had cracks, similar to the one shown in photo 4. Structural cracks are indicative of poor materials, poor concrete curing, or both.

In January 2019, USACE told us that the exposed structural steel bars and cracked foundations were deficiencies, but could have been caused by external forces and did not necessarily mean that ACI used poor materials or poor concrete. USACE stated that it would contact ACI and direct it to repair these deficiencies. However, as of May 2019, USACE has not provided any documentation showing that ACI had made these repairs. USACE also stated that any determination that poor workmanship took place must be based on sufficient evidence and reviewed by competent engineers.

We found that USACE's local quality assurance representatives identified and reported to USACE four instances wherein ACI used deficient concrete during construction, and stated that the concrete was unacceptable. However, we did not find any record that USACE recorded the concrete problem as a deficiency or that the issue was corrected. Based on our professional engineers' review, the concrete deficiencies we identified during our site visits in July 2018 are the result of poor workmanship and remain a concern as of the publication of this report. Concrete foundations that are not structurally sound could compromise the transmission towers' integrity and cause them to collapse.

¹² Gantries are mainly used for guiding power conductors from the last tower near a substation to electrical equipment within a substation. These structures consist of a number of columns and beams.

¹³ Honeycombing refers to rough or pitted surfaces in concrete that result from incomplete filling of the concrete against the formwork, or voids in the concrete that result from incomplete filling of the space among the particles of coarse aggregate material.

Photo 3 - Concrete Foundation of Transmission Tower 72 with Exposed Steel Reinforcing Rod



Source: SIGAR, July 23, 2018

Photo 4 - Cracks in the Concrete Foundation of Transmission Tower 154



Source: SIGAR, July 23, 2018

ACI Did Not Properly Compact the Soil Around 1 of the 21 Tower Foundations that SIGAR Inspected

The NEPS I contract's technical specifications stated that ACI should ensure the backfilled soil around transmission tower foundations was compacted before placing or erecting structural steel on the towers' concrete foundations. However, during our site visits, we found that the soil around 1 of the 21 towers we inspected—tower 1—contained 3.5-inch wide cracks, indicating the soil had not been properly compacted (see photos 5 and 6). Poor soil compaction around the foundation may reduce the tower's ability to withstand lateral stress, especially during an earthquake, thereby causing it to fall. This places Afghans living within the clear zone along the transmission line route at risk of injury or death, and could disrupt any power being transmitted through the system.

Photo 5 - Cracked Soil Around Transmission Tower 1



Source: SIGAR, July 23, 2018

Photo 6 - Cracked Soil Measuring 3.5 Inches Wide Around Tower 1



Source: SIGAR, July 23, 2018

ACI Installed Noncompliant Fire Doors in the Pul-e-Alam Substation

During our July 2018 site visits, we found that ACI did not install certified fire-rated doors in the Pul-e-Alam substation, as the NEPS I contract required. Fire doors are designed to protect building occupants from the spread of smoke and flames when a fire occurs. The contract required ACI to install nine fire doors fire-rated to 60 minutes.¹⁴ Further, the contract required that the construction comply with provisions of the International Building Code, which requires the installation of certified fire doors that have official manufacturers' labels with information attesting to the doors' fire rating. Specifically, the International Building Code requires that fire door labels

1. show the name of the manufacturer;
2. show the name or trademark of the approved certifying agency—Underwriters Laboratories, Factory Mutual Engineering and Research, or Warnock Hersey International—and the fire protection rating;
3. be permanently affixed to the fire door; and
4. be applied at the factory or location where the door fabrication and assembly are performed.

We found that although USACE approved ACI's submittal for Omran Steel Tech manufactured doors, none of Omran Steel Tech's products were included on any of the certifying agencies' list of approved products.

Photo 7 - Door in Pul-e-Alam Substation Without Fire Rating or Manufacturer's Label



Source: SIGAR, July 24, 2018

Further, we found that none of the doors installed at the Pul-e-Alam substation had a manufacturer's label with the required information, including the fire rating and proof of certification (see photo 7). The use of noncompliant fire doors raises concerns about whether the doors will provide adequate protection in the event of a fire. Without this protection, building occupants are at greater risk of injury or death during a fire.

In January 2019, USACE stated that ACI had an engineering assessment performed on the Pul-e-Alam substation doors and that the doors passed testing consistent with those required for certification from Underwriters Laboratories. However, assessment documentation does not indicate who performed the test or whether a certified engineer signed it. Further, it is not clear that the doors tested were the same as the doors

installed in the substation.

USACE Did Not Conduct Adequate Project Oversight of NEPS I

According to Department of Defense Directive 4270.5, USACE is the lead construction agent supporting the U.S. Central Command in its area of responsibility, which includes Afghanistan.¹⁵ USACE is responsible for administering contracts under its authority and overseeing its contractors, in accordance with the Federal Acquisition Regulation (FAR).¹⁶ FAR and USACE regulations state that the U.S. government must perform quality

¹⁴ Fire door ratings reflect the amount of time that the doors are expected to withstand exposure to fire conditions such as 20, 45, 60, or 90 minutes.

¹⁵ Department of Defense Directive 4270.5, "Military Construction," February 12, 2005.

¹⁶ FAR 46.104, *Contract Administration Office of Responsibilities*, states that contract administration responsibilities include developing and applying "efficient procedures for performing government contract quality assurance actions,"

assurance to ensure that contractor supplies and services conform to contract requirements.¹⁷ The government also uses quality assurance to ensure that contractor quality control systems are functioning and any specified end products, in this case the NEPS I transmission towers and lines and the Pul-e-Alam substation, are completed according to the contract.

A key element of USACE's quality assurance is its three-phase inspection process, which consists of preparatory, initial, and follow-up inspections of individual construction components to ensure compliance with applicable drawings, specifications, approved submittals, and authorized contract changes. The process includes meetings between USACE and the contractor to discuss each definable feature of work (DFOW).¹⁸ USACE and its contractor conduct the preparatory phase before the work starts for each DFOW, and the initial phase at the beginning of work on each DFOW. The preparatory phase is a review of contract plans and a check to ensure that all materials and equipment have been tested, submitted, and approved. The initial phase is a review of preparatory meeting minutes and a check of preliminary work.¹⁹ The contractor is required to prepare minutes after the preparatory and initial phase meetings, and USACE is required to maintain records of those meetings. Follow-up inspections occur as the contractor performs the work and completes each DFOW to ensure that the contractor continues to comply with contract requirements.

The NEPS I project consisted of 66 DFOWs, requiring minutes for 132 meetings for the preparatory and initial phases of the quality assurance inspection process.²⁰ USACE was not able to provide us with any of the 66 required initial meeting minutes and provided only 1 of the 66 required preparatory meeting minutes. All of the deficiencies we identified in our inspection involve DFOWs. For example, NEPS I DFOWs included concrete used for transmission tower foundations and fire doors required for the Pul-e-Alam substation. However, USACE could not provide us with the preparatory or initial meeting minutes for either of these two items. In July 2018, USACE officials stated that ACI was responsible for completing the initial and preparatory meeting minutes. The officials stated that they would ask ACI to provide copies of the minutes and, once received, provide the minutes to SIGAR. As of the date of this report, we have not received copies of those minutes.

Another key element of USACE's quality assurance effort is the production of daily quality assurance reports, prepared on USACE's behalf by Afghan nationals, referred to as local national quality assurance personnel.²¹ During our review of the NEPS I contract documents, we found four instances wherein a local national quality assurance official identified ACI's use of deficient concrete during construction and reported the unacceptable concrete to USACE. The local national quality assurance official identified one instance in which concrete failed required testing, and three instances in which concrete mixtures were inconsistent with contract requirements. We did not find any record that USACE included the concrete issue in its reporting on NEPS I's deficiencies or

performing "all actions necessary to verify whether the supplies or services conform to contract quality requirements," and maintaining "the performance records of the contract..."

¹⁷ FAR 46.4, *Government Contract Quality Assurance*, states that government contract quality assurance shall be performed "as may be necessary to determine that the supplies or services conform to contract requirements." FAR 46.1, *General*, states that government contract quality assurance consists of various functions "pertaining to quality and quantity." USACE Engineer Regulation 1180-1-6, *Construction Quality Management*, dated September 30, 1995, states that quality assurance "is the system by which the government fulfills its responsibility to be certain the [contractors' quality control] is functioning and that the specified end product is realized." It also states that "[quality assurance] is required on all construction contracts."

¹⁸ DFOWs are distinct tasks that have separate quality control requirements.

¹⁹ According to USACE, levels of workmanship for each DFOW are also established during the initial phase. The follow-up phase consists of daily checks of the contractor's work and comparing it to contract requirements.

²⁰ Examples of NEPS I system DFOWs are demolition, concrete work, earthwork and foundation preparation, roads, communications systems, electrical tower erection, doors, and generators.

²¹ USACE uses a personal services contract to hire local national quality assurance personnel to perform oversight activities at project sites that USACE employees would normally conduct but are unable to do in Afghanistan for security reasons. We are currently conducting an audit to assess USACE's efforts to hire local national quality assurance personnel to conduct this oversight.

that the issue was corrected. Further, the local national quality assurance official stated in a daily report that ACI was ignoring his concerns and continuing to use unacceptable concrete during NEPS I's construction.

We previously identified issues with USACE's oversight and implementation of its three-phase inspection process.²² In response, USACE acknowledged the past lack of emphasis on three-phase inspection documentation by its contractors, contracting officer representatives, and local national quality assurance personnel. USACE provided training to its contracting officer representatives and local personnel, and issued a November 2018 memorandum to its construction contractors regarding incomplete documentation of its three-phase inspection process.²³ The memorandum highlighted key provisions of the process and re-emphasized the need for contractors' quality control managers to correctly execute and document the process for each DFO. In January 2019, USACE issued a second memorandum to add requirements to its local national quality assurance personnel contract to reassign personnel to better execute its mission.²⁴ USACE plans to reassign high-performing local national quality assurance civil, electrical, and mechanical engineers to three quality assurance teams managed by USACE's Contract Administration Branch at Bagram Air Field. These teams will perform inspections where USACE personnel cannot access construction sites and provide on-site support to ensure that contractors comply with the construction quality control management process. The teams will visit sites during key construction phases, the final and follow-up inspections, and the warranty inspections. USACE stated these efforts will help address the sort of documentation and lack of oversight issues we found during this and other inspections.

USACE Stated that NEPS I Has Been Tested but Has Not Provided Documentation of the Test Results

The NEPS I contract required that ACI test the transmission lines and substation up to "full load," meaning that the system must be powered up to the maximum capacity of the transmission lines plus 10 percent.²⁵ Testing transmission lines and substations up to full load provides assurance that the system will function safely and as designed during normal operations. Further, this testing allows USACE, the MEW, and DABS to identify faulty products and workmanship, which, if not identified, may pose a risk to the system, Afghans living within the clear zone along the transmission line route, and personnel working at the substation.

In June 2018, DABS told us that ACI had not tested the NEPS I transmission lines at full load prior to turnover to the Afghan government. However, in January 2019, USACE told us that DABS tested the system before U.S. Forces-Afghanistan turned it over to the Afghan government. Since May 2018 and again during our January 2019 meeting with USACE, we requested the full load test data, but USACE did not provide documentation that either ACI or DABS had tested the NEPS I system under full load as of the date of this report. Full load testing of NEPS I is important to ensure that the system can operate safely, does not have any defects, and can provide Afghans the amount of electricity intended.

²² For example, see SIGAR, *Kabul Military Training Center Phase IV: Poor Design and Construction, and Contractor Noncompliance Resulted in the Potential Waste of as Much as \$4.1 Million in Taxpayer Funds*, SIGAR 18-01-IP, October 10, 2017; SIGAR, *Afghan National Police Women's Compound at the Ministry of Interior: Construction Generally Met Requirements, but Use and Maintenance Remain Concerns*, SIGAR 19-04-IP, October 26, 2018; and SIGAR, *Afghan National Army Camp Commando Phase III: Facility Construction and Renovation Generally Met Contract Requirements, but Three Construction Deficiencies Increased Safety Risks*, SIGAR 19-09-IP, December 28, 2018.

²³ USACE Memorandum, *Three-Phase Inspection Process*, November 6, 2018.

²⁴ USACE Memorandum For Record, *W912ER17D0003-W912ER18F0078 Afghanistan Personnel Services Contract – Addition of A-Qat Personnel*, January 20, 2019. "A-QAT" stands for Afghanistan quality assurance team.

²⁵ In this case, full load testing means the 220 kV transmission line between the Arghandi and Pul-e-Alam substations must be powered up to a maximum capacity of 245 kV.

NEPS I IS REPORTEDLY OPERATIONAL, BUT THE SYSTEM DOES NOT HAVE ENOUGH POWER TO OPERATE AT FULL CAPACITY, AND A NEW PLANNED POWER SOURCE MAY BE INSUFFICIENT

The Afghan government has been fully responsible for operating and maintaining the NEPS I system since USACE transferred the Pul-e-Alam substation, the final component of the project, to it in May 2018. According to USACE, NEPS I has been energized and is being used to provide electricity to residents and businesses in Kabul and Logar provinces. However, our review of project documentation and interviews with Afghan government officials indicate that the amount of power currently available for NEPS I may not be sufficient to provide electricity to all 30,000 Afghans that it was designed to serve. In addition, it is not clear whether a new ADB-funded electrical project designed to provide additional power to NEPS I and other U.S.-funded electrical projects will be sufficient to operate NEPS I at full capacity.

NEPS I Is Reportedly Providing Power but Cannot Operate at Full Capacity with Its Existing Power Source

A fully operational NEPS I was designed to distribute 32 MW of electricity to its customers. In January 2019, USACE officials told us that the system has been energized and is providing electricity to residents and business in Kabul and Logar provinces. However, USACE has not provided us with any documentation showing that NEPS I is distributing power, how many Afghan residents and businesses are receiving power, or how many hours per day the power is being supplied. Similarly, neither the MEW nor DABS provided us documentation showing how many Afghans were receiving power through the NEPS I system.

Currently, the NEPS I system receives power from a 220 kV transmission line originating in Uzbekistan. This transmission line also supplies power to areas north of NEPS I, including the city of Kabul. According to a March 2018 ADB and U.S. Agency for International Development sponsored study, the 419 MW electricity available to supply Kabul through this transmission line is not sufficient to meet the city's demand of 600 MW.²⁶ The study noted that after the 220 kV transmission line passes through the city, there is no electricity left to supply the NEPS I system. In June 2018, DABS officials told us that about 7 MW of electricity were available from the transmission line to be shared between the NEPS I project and other U.S. government funded projects, including NEPS phases II and IV, and the Power Transmission Expansion and Connectivity project transmission from Arghandi to Ghazni.²⁷ Because the Pul-e-Alam substation is receiving at most 7 MW, or almost 22 percent of the planned 32 MW of power, it cannot operate at full capacity with its existing power source.

Another Transmission Line to Power NEPS I Is Under Construction, but the Amount of Power Expected May Not Be Sufficient to Operate the System at Full Capacity

The ADB is funding the construction of a new 500 kV transmission line, originating in Turkmenistan, to address the shortage of power throughout Afghanistan. When completed, the transmission line will extend from

²⁶ Dynamic Vision, *Load Flow Analysis Report: NEPS-SEPS Connector Supply*, March 2018. Dynamic Vision is an Afghan consultancy group that provides support and construction management services for power projects in Afghanistan.

²⁷ The U.S. Agency for International Development's \$317 million Power Transmission Expansion and Connectivity project includes 422 transmission towers and a 220 kV transmission line from Arghandi to Ghazni and substations at Ghazni and Sayadabad. SIGAR is currently conducting a performance audit examining the project and recently issued an inspection on one construction activity completed under the project: SIGAR, *USAID's Power Transmission Expansion and Connectivity Project: Arghandi-Ghazni Transmission Line Was Generally Built to Contract Requirements but Four Deficiencies Create Safety Hazards and Could Disrupt Electrical Power*, SIGAR 19-35-IP, April 29, 2019.

Turkmenistan to the Arghandi substation, which is connected to NEPS I (see figure 2).²⁸ ADB and USACE officials stated that this 500 kV transmission line will provide enough power to fully operate NEPS I. ADB and DABS officials added that the 500 kV transmission line would also provide power for NEPS phases II and IV, and other parts of Afghanistan’s electric power system. However, an ADB official stated the project’s actual completion date will be in 2022 or 2023 instead of in 2019 as initially planned. According to ADB officials, land acquisition issues and insecurity in the areas along the proposed route could impact the completion of the 500 kV transmission line and make it difficult to determine when the project will be completed.

Figure 2 - 500 kV Transmission Line Route



Source: SIGAR analysis of project documents.

Once completed, it is unclear whether the new 500 kV transmission line from Turkmenistan will transmit enough power for the Afghan government to operate NEPS I or other U.S. government-funded projects at full capacity. For example, a March 2018 study sponsored by ADB and the U.S. Agency for International Development stated that when the 500 kV transmission line is completed, Turkmenistan will supply Afghanistan with up to 1,230 MW of power by 2023. However, the 10-year power purchasing and sales agreement between the governments of Afghanistan and Turkmenistan states that

Afghanistan’s peak power demand via the transmission line will be at most 300 MW over the 10 year period.²⁹ Given that Kabul’s peak electricity demand is already 600 MW, it is unclear how much power will be left over to be transmitted to NEPS I and other parts of Afghanistan’s electric power system.

CONCLUSION

Although the NEPS I system has been completed, it may not be safe to operate. First, USACE did not fulfill its responsibility to ensure that the Afghan government determined ownership of all the land along the transmission route and either purchased or acquired the rights-of-way to affected privately owned land. Second, USACE allowed ACI to build transmission towers and lines on the private land without clearing it to ensure landowner safety. Under its project management plan, USACE could have suspended or terminated the contract to minimize financial risks until the affected land had been properly acquired and cleared, but it did not do so. In addition, the foundations of at least 17 transmission towers built by ACI exhibit poor concrete work and 1 foundation is sitting on cracked, poorly compacted soil. These deficiencies raise concerns about whether

²⁸ The 500 kV transmission line project consists of transmission lines and substations originating in Turkmenistan and terminating at the Arghandi substation in Wardak province. DABS is administering the project’s three contracts and overseeing the project.

²⁹ The governments of Afghanistan and Turkmenistan signed the 10-year power purchasing and sales agreement on November 6, 2015. The agreement states that Turkmenistan will sell electricity to Afghanistan for 10 years, beginning January 1, 2018, and ending December 31, 2027, and specifies the price, quantity, and timeframes in which the electricity will be sold.

the strength of those and other tower foundations could be compromised. Compromised foundations could reduce the structural integrity of the towers and cause them to collapse, putting Afghans living within the clear zone along the transmission route at risk of injury or death and increasing the risk of power outages. However, because the warranty for these two deficiencies has expired, USACE cannot direct ACI to correct them.

Further, ACI did not install certified fire-rated doors in the Pul-e-Alam substation, as required. These noncompliant doors may not operate as expected and may give a false sense of safety to occupants should a fire occur. Due to inadequate project oversight, USACE failed to identify these construction deficiencies during its three-phase inspection process.

Lastly, USACE has not provided any evidence to show that NEPS I has been tested at full electrical load. As a result, it is unknown whether there are system defects or if the system will function safely and as intended.

According to USACE, NEPS I is being used, but USACE, the MEW, and DABS do not know how much electricity the system is transmitting or how many Afghan residences and businesses are being served. Nonetheless, the 7 MW of electricity that DABS claims is being distributed from NEPS I's Pul-e-Alam substation is well below its 32-MW distribution capacity. Until NEPS I has enough power to distribute electricity at its maximum capacity, a majority of the 30,000 Afghans living in Kabul and Logar provinces may need to find other sources of electricity to meet their needs. Finally, the prospects for significantly increasing the transmission of electricity to NEPS I and other projects from Turkmenistan are unclear.

RECOMMENDATIONS

To protect U.S. taxpayers' investment in NEPS I, and to enhance the safety for Afghans living near transmission towers and lines or working in the Pul-e-Alam substation, we recommend that the USACE Commanding General and Chief of Engineers:

1. **Work with the Afghan Ministry of Energy and Water (MEW) to ensure that the Afghan government has developed plans to**
 - a. **determine ownership of undocumented land along the NEPS I transmission line,**
 - b. **obtain the legal right to access all land required for the operation and maintenance of the NEPS I transmission line, and**
 - c. **address dangers posed by transmission lines running near residences and other structures.**
2. **Work with the MEW to issue notices to residents living along the NEPS I transmission line route, informing them of the safety hazards associated with living within the clear zone along transmission lines, and include guidance about how to deal with emergencies involving the lines that could occur.**
3. **Work with the MEW to examine all of the transmission towers to ensure that the concrete and soil compaction were completed in accordance with the contract and develop corrective actions for the ministry to consider taking if a tower foundation is noncompliant.**
4. **Direct ACI to replace the noncompliant fire doors or seek reimbursement from ACI for any price difference, before the warranty expires in August 2019.**

AGENCY COMMENTS

We provided a draft of this report to the Department of Defense for review and comment. USACE provided written comments, which are reproduced in appendix II. USACE generally disagreed with the report's "comments and conclusions," and did not concur with any of SIGAR's four recommendations. USACE also provided technical comments, which we incorporated into this report, as appropriate.

USACE did not concur with recommendation 1a to work with the MEW to ensure that the Afghan government develops plans to determine ownership of undocumented land along the NEPS I transmission line. USACE stated that the determination of land ownership is a responsibility of the Afghan government, not USACE.

USACE also stated that the Afghan government provided it with the required clearances for construction. Specifically, USACE stated that it followed the NATO Training Mission–Afghanistan/Combined Security Transition Command–Afghanistan’s August 2011 procedures and received a license from the Afghan Ministry of Public Works in June 2015 for construction, land access, and land usage of certain rights-of-way for the NEPS I project. USACE added that it relied on the Ministry of Public Works to be the rightful and legal landowner of any land under the license. The August 2011 procedures were to ensure that the Afghan government provided USACE the appropriate legal authority to build infrastructure projects on only public and private land that it owned or leased.

USACE’s comments and the documentation it provided are irrelevant to our finding and recommendations 1a and 1b, which address rights to access privately owned land. Specifically, we found that the August 2011 procedures and June 2015 license only state that the Afghan government owns all *public* roads and rights-of-way to land adjacent to those roads. The license grants the U.S. government and its contractors access to this public land to plan, design, and construct electrical power transmission and distribution projects. As stated in this report, we found that approximately 45 percent of construction took place on private land not owned or leased by the Afghan government and another 40 percent on land for which ownership had not been determined. The NEPS I contract stated that USACE would not issue ACI a notice to proceed with construction until land purchase and right-of-way issues were resolved. This requirement applied to all land needed for construction, both public and private. USACE’s own documentation shows that as early as August 2016, it expressed concerns about land ownership and in February 2017, it knew that ACI would not demolish the privately held buildings crossed by transmission lines due to unresolved land issues. In addition, under its project management plan, USACE could have suspended or terminated the contract to minimize any financial and safety risks until the affected land had been properly acquired and cleared, but it did not do so. Therefore, this recommendation remains open.

USACE did not concur with recommendation 1b to work with the Afghan government to obtain the legal right to access all land required for the operation and maintenance of the NEPS I transmission line. Again, USACE cited the Afghan Ministry of Public Works license granting the U.S. government access to public roads and rights-of-way to land adjacent to those roads. This license granted the U.S. government the right of entry to this publicly owned land for 60 months from the date of the license. As stated in this report, about 45 percent of the NEPS I power transmission lines are located on privately owned land, and according to DABS, the Afghan government had not yet purchased or acquired the rights-of-way from private landowners. Therefore, this recommendation remains open.

USACE did not concur with recommendation 1c to work with the MEW to address dangers posed by transmission lines running near residences and other structures. In its comments, USACE stated that it does not believe there are any dangers posed by the transmission lines, provided that proper maintenance of the transmission line route is performed. USACE also stated that the Afghan government is responsible for addressing dangers to residences and other structures, and that it is not within the scope of its contract to notify residents living along the NEPS I transmission line route. Despite its assertion that the transmission lines do not pose any danger to nearby structures, we found that USACE modified the NEPS I contract to (1) de-scope requirements for ACI to clear the land along the transmission line route, and (2) implement safety provisions, including grounding conductors and locking equipment to prevent the Afghan government from operating the system. These provisions were intended to mitigate safety risks associated with turning over the system even though the land had not been cleared. Further, as we stated in this report, about 3 weeks after USACE implemented these safety provisions, DABS ungrounded the system to make it operational, thereby reintroducing the safety hazards USACE attempted to remove. As a result, residents could potentially be injured or killed, and property could be damaged if a transmission tower collapsed or a transmission line fell. Therefore, this recommendation remains open.

USACE did not concur with recommendation 2 to work with the MEW to issue notices to residents living along the NEPS I transmission line route informing them of safety hazards associated with living within the clear zone and how to deal with any potential emergencies involving the lines. Again, USACE stated that the Afghan

government is responsible for taking these actions, and that these actions were not within the scope of ACI's contract. As we stated previously, the NEPS I system may present safety hazards to Afghans living along the transmission line route. The Afghan residents we spoke with stated that ACI informed them of potential hazards associated with being in proximity to power lines; however, it is not clear that residents will be prepared to manage safety incidents brought about by the construction and operation of a potentially hazardous system. Therefore, this recommendation remains open.

USACE did not concur with recommendation 3 to work with the MEW to ensure all transmission towers' concrete and soil compaction were completed in accordance with the contract, and to develop possible corrective actions if a tower's foundation is noncompliant. USACE stated that it, together with the Afghan government, inspected all of the transmission towers prior to turnover and found the foundations acceptable. USACE also stated it would not re-inspect the towers for cosmetic features and that there are no safety concerns with the stability of the transmission towers. As we stated in this report, based on our professional engineers' review, the damage to the concrete tower foundations is the result of poor workmanship and is indicative of poor materials, poor concrete curing, or both. Further, the cracked soil that we found near one transmission tower indicated that the soil had not been properly compacted, which may reduce the tower's ability to withstand stress, such as an earthquake. These situations could compromise the transmission towers' integrity and cause them to collapse. Therefore, this recommendation remains open.

USACE did not concur with recommendation 4 to direct ACI to replace noncompliant fire doors or seek reimbursement from ACI for any price difference. USACE stated that the doors ACI installed met the contract requirements. USACE also stated that the National Fire Protection Association 101 Life Safety Code does not require fire-rated doors for single tenant facilities. USACE further stated it will not require ACI to replace any of the doors or seek reimbursement because the contracting officer approved the facility design as having met the intent of the contract. We disagree that the installed doors complied with the accepted design and technical specifications. As stated in this report, the contract specifications specifically required ACI to install nine fire doors fire-rated to 60 minutes, with labels from one of the three certifying agencies attesting to the rating. Further, the contract required that construction comply with provisions of the International Building Code, which requires the installation of certified fire doors that have official manufacturers' labels with information attesting to the doors' fire rating. Therefore, this recommendation remains open.

APPENDIX I - SCOPE AND METHODOLOGY

This report provides the results of SIGAR's inspection of the North East Power System phase I (NEPS I). The objectives of this inspection were to determine whether NEPS I (1) was completed according to contract requirements and applicable construction standards, and (2) is being used. Specifically, we

- reviewed contract documents, design submittals, and other relevant project documentation;
- interviewed U.S. and Afghan government officials concerning the project's construction and use; and
- made 4 site visits to the Pul-e-Alam substation and to 21 of the 247 NEPS I transmission towers from July 23, 2018, through July 29, 2018.

We also interviewed 26 landowners living along the transmission line route. Due to security concerns, we selected areas close to the Pul-e-Alam and Arghandi substations that we could access safely to interview landowners.

We did not rely on computer-processed data in conducting this inspection. However, we considered the impact of compliance with laws and fraud risk.

In December 2014, SIGAR entered into a cooperative agreement with Afghan civil society partners. Under this agreement, our Afghan partners conduct specific inspections, evaluations, and other analyses. In this regard, Afghan engineers inspected the Pul-e-Alam substation and the 21 transmission towers during 4 site visits from July 23, 2018, through July 29, 2018. Afghan engineers also conducted interviews with 26 Afghans who owned land along the NEPS I transmission line route. We developed a standardized engineering evaluation checklist covering items required by the contract and design and specification documents. The checklist required our partners to analyze the contract documents, scope of work, technical specifications, and design drawings.

We compared the information our Afghan civil society partners provided to accepted engineering practices, relevant standards, regulations, laws, and codes for quality and accuracy. In addition, as part of our monitoring and quality control process, we

- met with the Afghan engineers to ensure that the approach and planning for the inspection were consistent with the objectives of our inspection and the terms of our cooperative agreement;
- attended periodic meetings with our partners and conducted our normal entrance and exit conferences with agency officials;
- discussed significant inspection issues with our partners;
- referred any potential fraud or illegal acts to SIGAR's Investigations Directorate, as appropriate;
- monitored our partners' progress in meeting milestones and revised contract delivery dates as needed; and
- conducted oversight of our partners in accordance with SIGAR's policies and procedures to ensure that their work resulted in impartial, credible, and reliable information.

We conducted our work in Kabul and Bagram, Afghanistan, and at various locations along NEPS I from October 2017 through August 2019. This work was conducted in accordance with the *Quality Standards for Inspection and Evaluation* published by the Council of the Inspectors General on Integrity and Efficiency. Our professional engineers conducted the engineering assessment in accordance with the National Society of Professional Engineers' *Code of Ethics for Engineers*. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our inspection objectives. We conducted this inspection under the authority of Public Law No. 110-181, as amended, and the Inspector General Act of 1978, as amended.

APPENDIX II - COMMENTS FROM THE U.S. ARMY CORPS OF ENGINEERS



DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS
TRANSATLANTIC DIVISION
201 PRINCE FREDERICK DRIVE
WINCHESTER, VIRGINIA 22602-4373

19 July 2019

SUBJECT: Response to Special Inspector General for Afghanistan Reconstruction (SIGAR) Draft Report, I-052 Afghanistan's North East Power System (NEPS) Phase I

Mr. John F. Sopko
Special Inspector General for Afghanistan Reconstruction
1550 Crystal Drive, Suite 900
Arlington, VA 22202

Dear Mr. Sopko:

The purpose of this letter is to provide the U.S. Army Corps of Engineers (USACE) response to the subject report.

The USACE generally disagrees with the inspection comments and conclusions and non-concurs with the four recommendations directed to USACE. We believe the report contains factually incorrect information, misleading content, and misrepresents the efforts of USACE in the administration of the contract to design and construct the North East Power System (NEPS) Phase I project. Additional details are provided in the enclosures.

My point of contact for this response is Ms. Erin K. Connolly, TAD Internal Review Auditor (Interim). She may be reached by e-mail at erin.k.connolly@usace.army.mil or by telephone at 540-665-5348.

Sincerely,

A handwritten signature in black ink, appearing to read "Christopher G. Beck".

CHRISTOPHER G. BECK
COL, EN
Commanding

Enclosures

cc:
Chief, Internal Review HQUSACE

ENCLOSURE 1

RECOMMENDATION 1: WORK WITH THE MEW TO ENSURE THAT THE AFGHAN GOVERNMENT HAS DEVELOPED PLANS TO:

1.a. DETERMINE OWNERSHIP OF UNDOCUMENTED LAND ALONG THE NEPS I TRANSMISSION LINE

USACE RESPONSE TO RECOMMENDATION 1.a. - NON-CONCUR

The determination of ownership is a responsibility of the Government of Islamic Republic of Afghanistan (GIROA), not the U.S. Army Corps of Engineers (USACE). The GIROA provided the USACE with the required clearances for construction. USACE follows the procedures prescribed under North American Treaty Organization (NATO) Training Mission – Afghanistan (NTM-A) / Combined Security Transition Command – Afghanistan (CSTC-A) FRAGO 11-518, "Requests for Land Use to Support Afghan National Security Forces (ANSF) at New Sites," August 7, 2011. In accordance with these procedures, USACE attained a license for construction, land access and land usage of certain rights of way from the GIROA Ministry of Public Works (MPW) for the subject project. GIROA warranted that it is the rightful and legal owner of the land for which it granted this License. USACE relies on such assurances from GIROA and CSTC-A that the procedures outlined in NTM-A/CSTC-A FRAGO 11-518 have been followed.

1.b. OBTAIN THE LEGAL RIGHT TO ACCESS ALL LAND REQUIRED FOR THE OPERATION AND MAINTENANCE OF THE NEPS I TRANSMISSION LINE

USACE RESPONSE TO RECOMMENDATION 1.b. - NON-CONCUR

USACE follows the procedures prescribed under NTM-A - CSTC-A FRAGO 11-518, "Requests for Land Use to Support Afghan National Security Forces (ANSF) at New Sites," August 7, 2011 as mentioned in the USACE response to 1.a. above.

The GIROA, Minister of Public Works (MPW) issued a license for construction, land access and land usage of certain rights of way in Afghanistan on 30 May 2015. The license was issued to the United States of America (USA) in consultation with the Ministry of Energy and Water (MEW) and in concert with Da Afghanistan Breshna Sherkat (DABS) and their desires to construct, for the benefit of the Afghan people, electric transmission and distribution lines along and in reasonable proximity to such public roads. The license granted an irrevocable Right of Entry (ROE) for a period of 60 months to the provinces Paktya, Logar, Wardak, Ghazni, Bamyan, Parwan, Panjshir, Kapisa and Kabul in Afghanistan. The letter also states "GIROA warrants that it is the rightful and legal owner of the herein described rights of way and has the legal right to enter into this license." This document was sufficient in the USACE's judgement, that

ENCLOSURE 1

Right of Way (ROW) along the North East Power System (NEPS) Phase I transmission line had been obtained by the GIRoA MWP.

1.c. ADDRESS DANGERS POSED BY TRANSMISSION LINES RUNNING NEAR RESIDENCES AND OTHER STRUCTURES

USACE RESPONSE TO RECOMMENDATION 1.c. - NON-CONCUR

The USACE does not believe there are any dangers posed by the transmission lines, provided proper maintenance of the transmission line route is performed by the end user. Notification to the residents living along the NEPS I transmission route line is not within the scope of the USACE construction contract. This notification is a responsibility of the GIRoA, MEW, and/or DABS.

RECOMMENDATION 2: WORK WITH THE MEW TO ISSUE NOTICES TO RESIDENTS LIVING ALONG THE NEPS I TRANSMISSION LINE ROUTE INFORMING THEM OF THE SAFETY HAZARDS ASSOCIATED WITH LIVING WITHIN THE CLEAR ZONE ALONG THE TRANSMISSION LINES AND INCLUDE GUIDANCE ABOUT HOW TO DEAL WITH ANY POTENTIAL EMERGENCIES INVOLVING THE LINES.

USACE RESPONSE TO RECOMMENDATION 2 - NON-CONCUR

Notification to the residents living along the NEPS I transmission route line is not within the scope of the USACE construction contract. This notification is a responsibility of the GIRoA, MEW, and/or DABS. SIGAR states in their draft report on page 4 that the 26 landowners they met with told them they have been informed about the dangers associated with living under the transmission lines. The draft did not indicate who had made this notification or whether this person had the requisite technical knowledge or ministerial authority to make such a notification.

RECOMMENDATION 3: WORK WITH THE MEW TO EXAMINE ALL OF THE TRANSMISSION TOWERS TO ENSURE THAT THE CONCRETE AND SOIL COMPACTION WERE COMPLETED IN ACCORDANCE WITH THE CONTRACT, AND DEVELOP CORRECTIVE ACTIONS FOR THE MINISTRY TO CONSIDER TAKING IF A TOWER FOUNDATION IS NONCOMPLIANT

USACE RESPONSE TO RECOMMENDATION 3 - NON-CONCUR

ENCLOSURE 1

MEW, DABS and USACE inspected all of the transmission towers prior to turnover and found the state of the foundations acceptable. The USACE is not going to re-inspect for cosmetic features. Should the MEW or DABS find a structural issue during the warranty period, the contractor will repair or correct the issue as required by the Warranty Management Plan. There are no safety concerns with the stability of transmission towers.

RECOMMENDATION 4: DIRECT ACI TO REPLACE THE CONCOMPLIANT FIRE DOORS OR SEEK REIMBURSEMENT FROM ACI FOR ANY PRICE DIFFERENCE BEFORE THE WARRANTY EXPIRES IN AUGUST 2019

USACE RESPONSE TO RECOMMENDATION 4 – NON-CONCUR

The installed doors meet the requirements of the contract.

USACE awarded a design-build contract. The contractor designed the substation facility in accordance with (IAW) the contract's design specifications and requirements. The contract plans and specifications refer to National Fire Protection Association (NFPA) 101 Life Safety Code (LSC), which does not require fire-rated corridors for single tenant facilities. The substation facility is classified as a single tenant facility. Per the NFPA 101, a fire-rated door would only be required for the storage room. However, the only door to the storage room exits directly to the outside. A fire-rated door would be redundant under NFPA 101, therefore no fire-rated doors are required in the substation facility. No contract actions/remedies are necessary. The design was submitted by a registered professional engineer and was accepted by the government. The USACE concurs with SIGAR's observation that the installed door is not a fire-rated door, however, the contracting officer approved the facility design as having met the intent of the contract. USACE will not require the contractor to replace any doors, nor seek reimbursement for any negligible price difference between rated and non-fire-rated doors.

APPENDIX III - ACKNOWLEDGEMENTS

Steven Haughton, Senior Inspection Manager

Robert Rivas, Inspector-in-Charge

Chelsea Cowan, Program Analyst

Ahmad Javed Khairandish, Civil Engineer

Abdul Rahim Rashidi, Program Analyst

Yogin Rawal, Professional Engineer

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- Phone DSN Afghanistan: 318-237-3912 ext. 7303
- Phone International: +1-866-329-8893
- Phone DSN International: 312-664-0378
- U.S. fax: +1-703-601-4065

Public Affairs

Public Affairs Officer

- Phone: 703-545-5974
- Email: sigar.pentagon.ccr.mbx.public-affairs@mail.mil
- Mail: SIGAR Public Affairs
2530 Crystal Drive
Arlington, VA 22202