

SIGAR

**Special Inspector General for
Afghanistan Reconstruction**

SIGAR 19-35 Inspection Report

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



APRIL
2019

SIGAR

Special Inspector General for Afghanistan Reconstruction

WHAT SIGAR REVIEWED

On December 5, 2012, the U.S. Agency for International Development (USAID) issued an implementation letter to fund the Power Transmission Expansion and Connectivity (PTEC) project in Afghanistan. According to USAID, the 10-year project has an on-budget ceiling of \$317 million. Da Afghanistan Breshna Sherkat (DABS), the Afghan government's electrical utility, is responsible for implementing PTEC in collaboration with the Afghan Ministry of Finance. The PTEC project consists of three components—energy infrastructure construction, DABS commercialization, and private sector energy development—and is expected to improve the power supply for 2.4 million Afghans.

On March 26, 2014, as part of PTEC's energy infrastructure component, DABS awarded KEC International Ltd. a \$56.7 million contract to design, supply, and construct a 76-mile-long, 220-kilovolt double-circuit transmission line between Arghandi and Ghazni. After four contract amendments, the component's completion date was extended from December 31, 2016, to August 31, 2017, and the contract's value increased to \$59.2 million. In April 2015, USAID contracted with Tetra Tech Inc. to provide construction management and quality assurance services, capacity building, and media assistance for the project. KEC International completed the project on August 31, 2017.

The objectives of this inspection were to determine whether the PTEC transmission towers and line between Arghandi and Ghazni (1) were constructed according to contract requirements and applicable construction standards, and (2) are used and maintained.

April 2019

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 INSPECTION REPORT

WHAT SIGAR FOUND

During July 4 and August 21, 2018, site visits, SIGAR found that KEC International generally built the PTEC towers and transmission line between the Arghandi and Ghazni substations according to contract requirements and technical specifications. The 18 towers that SIGAR inspected were standing, and the transmission line was strung on the towers.

However, SIGAR also found four deficiencies—one involving trees interfering with the transmission line and three relating to the construction of tower foundations.

- KEC International did not clear all trees close to the transmission line as required. Trees contacting the line create a safety hazard and could disrupt electrical service.
- The foundations of 2 of the 18 towers inspected were experiencing soil settlement. The contract required KEC International to backfill the foundations to at least 8 inches above the original ground surface. However, based on SIGAR's observations at the two sites experiencing soil settlement, it is not certain that KEC International backfilled to 8 inches. Weak support in the transmission tower base could cause it to tilt or collapse, creating a safety hazard and disrupting electrical service.
- The foundations of 5 of the 18 towers inspected were vulnerable to soil erosion because KEC International did not provide backfill or riprap—a pile of broken stones used as a foundation or to stabilize an easily eroded bank or slope. Erosion could threaten the structure's stability and lead to the tower tilting or collapsing, creating a safety hazard and disrupting electrical service.
- KEC International added a layer of concrete on top of the originally placed concrete to the foundations of 4 of the 18 towers inspected. This has resulted in a honeycomb finish, which could allow water to enter the concrete foundation. This could corrode the base of the metal tower and weaken its stability.

Tetra Tech sent USAID a letter stating that all four deficiencies SIGAR found were added to an updated punch list of items for KEC International to address before the warranty expires at the final inspection. On March 27, 2019, KEC International added the four deficiencies to an updated punch list for the final warranty inspection. USAID stated that KEC International was scheduled to start the final warranty inspection on April 15, 2019, subject to weather and security conditions along the transmission line route.

SIGAR found that the PTEC transmission line between Arghandi and Ghazni is being used and maintained. Although the line has the capacity to provide 300 megawatts of power, it provides only about 3 megawatts to approximately 12,000 customers in Ghazni and Wardak Provinces because the electricity distribution system in Afghanistan is not fully developed.

WHAT SIGAR RECOMMENDS

To protect the U.S. taxpayers' investment in PTEC, we recommend that the USAID Mission Director for Afghanistan work with Afghan Ministry of Finance and DABS officials to have KEC International take the following actions before the warranty expires at the final inspection:

- 1. Check all transmission tower locations and, where necessary,**
 - a. clear any trees or obstructions that threaten contact with the Arghandi-Ghazni transmission line;**
 - b. backfill soil around the tower foundations where soil settlement or erosion has occurred and add riprap; and**
 - c. refill or resurface any rough, uneven, or honeycombed concrete at the tower foundations.**

USAID provided written comments on a draft of this report and concurred with the recommendation. On March 27, 2019, USAID provided us with KEC International's updated punch list, which confirmed that it added the deficiencies to the final warranty inspection. In its comments, USAID stated that KEC International was scheduled to start the final warranty inspection on April 15, 2019, subject to weather and security conditions along the transmission line route. On April 18, 2019, USAID informed us that KEC International, DABS, and Tetra Tech were on site and the final warranty inspection started on April 12, 2019. We will close the recommendation when USAID provides evidence that the final inspection has been completed and the deficiencies corrected.



SIGAR

Office of the Special Inspector General
for Afghanistan Reconstruction

April 29, 2019

The Honorable Mark Green
Administrator, U.S. Agency for International Development

Mr. Peter Natiello
USAID Mission Director for Afghanistan

This report discusses the results of SIGAR's inspection of the Power Transmission Expansion and Connectivity (PTEC) project's transmission line between Arghandi and Ghazni. On December 5, 2012, the U.S. Agency for International Development (USAID) issued an implementation letter to fund the PTEC project in Afghanistan. On March 26, 2014, as part of PTEC's energy infrastructure construction component, Da Afghanistan Breshna Sherkat (DABS), the Afghan government's electrical utility, awarded KEC International Ltd. a \$56.7 million contract to design, supply, and construct a 76-mile-long, 220-kilovolt double-circuit transmission line between Arghandi and Ghazni. After four contract amendments, the project's completion date was extended from December 31, 2016, to August 31, 2017, and the value increased to \$59.2 million. In April 2015, USAID contracted with Tetra Tech Inc. to provide construction management and quality assurance services, capacity building, and media assistance for the project. KEC International completed the project on August 31, 2017.

During our July and August 2018 site visits, we found that KEC International generally built the PTEC towers and transmission line between Arghandi and Ghazni according to contract requirements and technical specifications. However, we also found four deficiencies—one involving trees interfering with the transmission line and three relating to the construction of tower foundations. For example, KEC International did not provide backfill or riprap—a pile of broken stones used as a foundation or to stabilize an easily eroded bank or slope—around 5 of the 18 tower foundations we inspected, leaving them vulnerable to soil erosion. These deficiencies, all of which created safety hazards and could disrupt the flow of electricity through the national transmission grid, resulted from KEC International's poor performance and, in the case of poor workmanship on the towers' concrete foundations, Tetra Tech not identifying the deficiency.

As of March 2019, the final construction warranty inspection had not been completed because of security concerns along the transmission line. As a result, KEC International was still responsible for addressing deficiencies covered under warranty. Tetra Tech sent USAID a letter on February 3, 2019, stating that all four construction deficiencies we found were added to an updated punch list of items for KEC International to address before the warranty expires. On March 27, 2019, KEC International added the four deficiencies to an updated punch list for the final warranty inspection. USAID told us that KEC International was scheduled to start the final warranty inspection on April 15, 2019, subject to weather and security conditions along the transmission line route.

In addition, we found that the transmission line is being used and maintained. The transmission line has the capacity to provide 300 megawatts of power, but is providing only about 3 megawatts to approximately 12,000 customers in Ghazni and Wardak Provinces because the electricity distribution system in Afghanistan is not fully developed.

We are making one recommendation in this report. To protect the U.S. taxpayers' investment in PTEC, we recommend that the USAID Mission Director for Afghanistan work with Afghan Ministry of Finance and DABS officials to have KEC International take the following actions before the warranty expires at the final inspection:



SIGAR

Office of the Special Inspector General
for Afghanistan Reconstruction

1. Check all transmission tower locations and, where necessary,
 - a. clear any trees or obstructions that threaten contact with the Arghandi-Ghazni transmission line;
 - b. backfill soil around the tower foundations where soil settlement or erosion has occurred and add riprap; and
 - c. refill or resurface any rough, uneven, or honeycombed concrete at the tower foundations.

We received written comments on a draft of this report from USAID, which are reproduced in appendix II. USAID concurred with the recommendation and provided documentation describing the actions it has taken to address the recommendation, including confirming that KEC International added the deficiencies to the punch list for the final warranty inspection and started the inspection. We will close the recommendation when USAID provides evidence that the final inspection has been completed and the deficiencies corrected.

We conducted this inspection 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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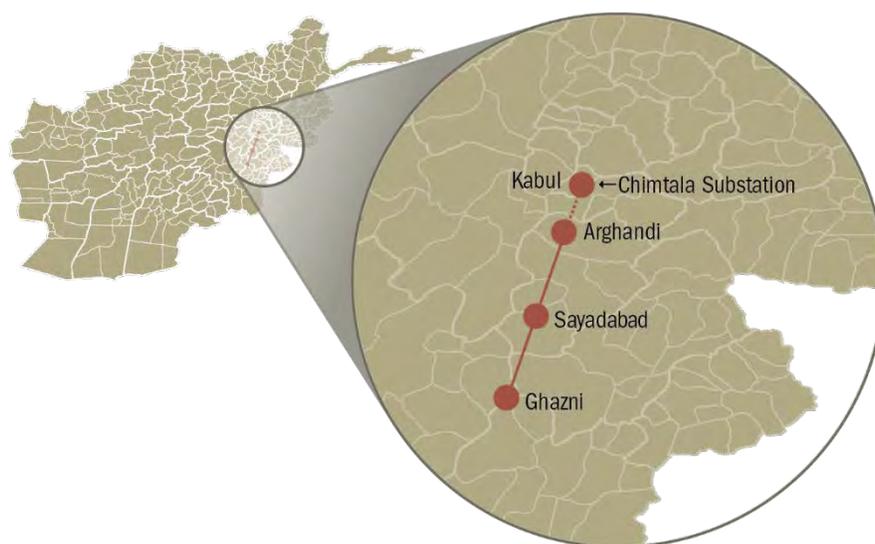
ABBREVIATIONS

DABS	Da Afghanistan Breshna Sherkat
PTEC	Power Transmission Expansion and Connectivity
USAID	U.S. Agency for International Development

On December 5, 2012, the U.S. Agency for International Development (USAID) issued an implementation letter—IL-22-1—to fund the Power Transmission Expansion and Connectivity (PTEC) project in Afghanistan.¹ According to USAID, the 10-year project’s on-budget ceiling is \$317 million, and the completion date is December 2023. Da Afghanistan Breshna Sherkat (DABS), the Afghan government’s electrical utility, is responsible for implementing PTEC in collaboration with the Afghan Ministry of Finance. PTEC’s components are (1) energy infrastructure construction, (2) DABS commercialization, and (3) private sector energy development. According to USAID, the PTEC project is expected to improve the power supply for 2.4 million Afghans, and its first component focuses on expanding access to electricity by constructing transmission towers and substations and laying a transmission line.

On March 26, 2014, as part of PTEC’s energy infrastructure construction component, DABS awarded KEC International Ltd., an Indian firm, a \$56.7 million contract to design, supply, and construct a 76-mile, 220-kilovolt double-circuit transmission line between Arghandi and Ghazni.² The transmission line runs south from a future Arghandi power substation to the Sayadabad substation and then south to the Ghazni substation (see figure 1).³ The project’s originally scheduled completion date was December 31, 2016.

Figure 1 - Map of PTEC Transmission Line and Substations



Source: SIGAR analysis of contract documents.

¹ An implementation letter is “formal correspondence between USAID and another party following a formal agreement that obligates funding. Implementation letters serve several functions, including providing more detailed implementation procedures, providing details on terms of an agreement, recording the completion of conditions precedent to disbursements, and approving funding commitments and mutually agreed upon modification to program descriptions.” See USAID, *Glossary of ADS Terms*, July 18, 2018 (partial revision), pp. 126-127.

² The contract number is DABS/92/ICB/004-Lot-1.

³ The Arghandi substation is still under construction, and electrical power currently flows into the line from the Chimtalla substation directly to the Sayadabad substation.

The project's scope of work included KEC International's construction of 422 transmission towers—245 towers between the Arghandi and Sayadabad substations and 177 towers between the Sayadabad and Ghazni substations (see photo 1). Each transmission tower was designed to include four separate concrete blocks at the foundation, which form the base for the tower's construction. The transmission line is a double-circuit transmission line with six conductors; a double-circuit line allows the transfer of more power than a single circuit transfers over a particular distance.⁴

There were four contract amendments to (1) allow mobilization payments, (2) change the contract's security plans, (3) add payments for repairs due to war damage, and (4) extend the project's completion date to August 31, 2017. The amendments increased the contract's value to \$59.2 million. In April 2015, USAID contracted with Tetra Tech Inc., a U.S. firm, to provide construction management and quality assurance services, capacity building, and media assistance for the project. KEC International completed the construction on August 31, 2017, and its 1-year construction warranty was scheduled to expire on August 30, 2018. However, as of March 2019, DABS, KEC International, and Tetra Tech had not completed the final warranty inspection because of security concerns along the transmission line. As a result, KEC International was still responsible for addressing construction deficiencies covered under the warranty.

The objectives of this inspection were to determine whether the PTEC Arghandi-Ghazni towers and transmission line (1) were constructed according to contract requirements and applicable construction standards, and (2) are used and maintained.

We conducted our work in Kabul and at locations along the PTEC transmission line from September 2017 through April 2019, 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*. Because of poor security conditions along sections of the transmission line, we inspected a sample of 18 towers, all of which were located close to the Arghandi, Ghazni, or Sayadabad substations. Appendix I has a detailed discussion of our scope and methodology.

THE TRANSMISSION LINE WAS GENERALLY BUILT TO MEET CONTRACT REQUIREMENTS, BUT FOUR DEFICIENCIES CREATED SAFETY HAZARDS AND COULD DISRUPT ELECTRICAL POWER

During our July 4 and August 21, 2018, site visits, we found that KEC International generally built the PTEC towers and transmission line between the Arghandi and Ghazni substations according to contract requirements and technical specifications. The 18 towers we inspected were standing, and the 76-mile transmission line runs between the substations. However, we also found that KEC International did not comply with contract technical requirements in four areas, one relating to trees interfering with the transmission line and three relating to the construction of tower foundations. These deficiencies created safety hazards and could disrupt the flow of electricity over the national power grid. Tetra Tech did not identify any the deficiencies in its daily quality assurance reporting.

Photo 1 - Section of the Arghandi-Ghazni Transmission Line



Source: SIGAR, July 4, 2018

⁴ A circuit is an unbroken loop of conductive material that allows charge carriers to flow through continuously.

In January 2019, USAID told us that the four deficiencies we found during our site visits should be added to the list of items for KEC International to fix before the project's warranty expires. According to USAID officials, on February 3, 2019, Tetra Tech sent USAID a letter stating that all four deficiencies had been added to an updated punch list of items for KEC International to address.⁵ The letter attached an updated punch list in an appendix. However, our review of the list found that it did not include the four deficiencies.

After receiving this draft report, which identified the deficiencies and noted that the punch list did not include them, on March 27, 2019, USAID gave us KEC International's updated punch list, which confirmed that it added the four deficiencies as items to address during the final warranty inspection. The warranty will remain in effect until the final inspection is completed. USAID stated that KEC International was scheduled to start the final warranty inspection on April 15, 2019, subject to weather and security conditions along the transmission line route.

KEC International Did Not Clear All Trees Close to the Transmission Line as the Contract Required

During our 2018 site visits, we found that KEC International did not clear trees from some sections of the Arghandi-Ghazni transmission line route (see photo 2). The contract requirements and technical specifications stated that KEC International should remove and dispose of trees and other vegetation, houses and huts, barns, and cattle sheds within a total width of 115 feet (about 57 feet on each side) of the center of the transmission line. The specifications also stated that the transmission line route should not be cleared until compensation or other entitlements had been made to the affected landowner.⁶ DABS was responsible for obtaining the right-of-way by compensating private landowners, but KEC International was responsible for surveying, marking, and clearing the route.

Photo 2 - Treetops Close to Transmission Line



Source: SIGAR, July 4, 2018

According to Tetra Tech officials, to get the construction started more quickly, DABS directed that the work begin even though the area around and underneath the towers had not been cleared. Tetra Tech stated that DABS preferred to address these right-of-way issues during construction, rather than clearing the entire transmission line route before KEC International started. In multiple quality assurance reports, Tetra Tech identified the failure to clear or trim trees as a barrier to finishing the project successfully. However, in an attachment to the May 2018 completion certificate, DABS stated that all landowners had received compensation for trees and indicated that KEC International should start trimming trees as soon as possible. Untrimmed trees can come into contact with the transmission line, especially when the line sags during periods of high temperatures or high winds. In addition, a tree that falls on the transmission line creates a safety hazard, and it could cause a power outage along the national power grid.

⁵ A punch list is a list of unfinished items that the contractor is required to complete before receiving final payment under the contract.

⁶ See the DABS/92/ICB/004-Lot-1 contract, technical specification subsection 1.3.7.

Two Tower Foundations Are Experiencing Soil Settlement

During our 2018 site visits, we found that foundations for two towers (AS-237 and AS-228) were experiencing soil settlement. The contract's technical specifications required that the contractor backfill the foundations to a minimum height of 8 inches above the original ground surface to compensate for soil settlement. However, based on our observations at the two sites experiencing soil settlement, we are not certain whether KEC International backfilled to the minimum 8-inch height. The specifications stated that KEC International was responsible for correcting soil settlement due to any cause throughout the warranty period.⁷

In May 2016, Tetra Tech's biweekly quality assurance report stated that 28 of the 422 towers had experienced some backfill settlement after the rainy season abated. However, since the report did not list the specific towers that were affected, we do not know whether the two towers we found were among those 28. According to Tetra Tech officials, KEC International was in the process of adding backfill to the 28 affected towers. We did not find any mention of the soil settlement issue in subsequent Tetra Tech quality assurance reports. Weak support in the transmission tower base can cause it to tilt or collapse, thereby creating a safety hazard and disrupting the national power grid.

Five Tower Foundations Are Vulnerable to Soil Erosion

During our 2018 site visits, we found 5 of the 18 tower foundations we inspected were on a steep slope more than 8 feet above the ground surface, thereby leaving them vulnerable to soil erosion if not protected (see photo 3).⁸ The contract technical specifications stated that the backfill for tower foundations should be protected from being washed away by surface water and the ground surface should be sloping from the tower foundations to provide drainage as required. Further, the contract required that riprap be provided around the foundations of towers built on hills and slopes to prevent soil erosion.⁹ However, we did not observe any riprap around the towers built on hills and slopes that we inspected.

In its February 11, 2016, quality assurance report, Tetra Tech stated that an assessment would be made to identify any locations where foundation improvements were needed to prevent soil erosion around the transmission towers. However, we could not determine from subsequent Tetra Tech reports whether the assessment was done or what foundation improvements, if any, were made. In October 2018, a senior DABS official said soil settlement and erosion were minor problems, and DABS had repaired the soil around many towers in the past.

Nonetheless, based on the soil erosion that we found during our site visits, we continue to be concerned that the transmission tower foundations are vulnerable to soil erosion and lack riprap. This could threaten the

Photo 3 - Foundation Showing Vulnerability to Soil Erosion



Source: SIGAR, July 4, 2018

⁷ See the DABS/92/ICB/004-Lot-1 contract, technical specification subsection 1.3.7.6.

⁸ The five towers whose foundations are vulnerable to erosion are AS-006, AS-009, AS-243, SF-173, and SG-176.

⁹ See the DABS/92/ICB/004-Lot-1 contract, technical specification subsection 1.3.7.6. Riprap is a pile of broken stones used as a foundation or to stabilize an easily eroded bank or slope.

structure's stability and potentially lead to the tower tilting or collapsing. This creates a safety hazard and could disrupt the national power grid.

KEC International Did Not Comply with Technical Specifications in Its Construction of Four Concrete Tower Foundations

During our 2018 site visits, we found that 4 of the 18 towers' concrete foundations were not finished in accordance with technical specifications.¹⁰ KEC International added a layer of concrete on top of the originally placed concrete, resulting in a rough, uneven, and honeycomb finish (see photo 4).¹¹ The contract's technical specifications stated that all permanently visible concrete surfaces should have a regular finish of uniform texture free from holes, pins, and formwork.¹² The specifications also stated that if any section of the concrete presents a rough, uneven, honeycombed, discolored, or imperfect appearance, KEC International was required to chisel away the concrete, and refill and properly reface the foundation.¹³ The honeycombed condition allows water to enter the concrete foundation and corrode the base of the metal tower. This could eventually weaken the tower's stability. We did not find any report of this deficiency in Tetra Tech's quality assurance reports.

Photo 4 - Concrete Foundation Exhibiting Poor Workmanship



Source: SIGAR, July 4, 2018

THE TRANSMISSION LINE IS TRANSMITTING ELECTRICITY AND IS MAINTAINED

We concluded that the Ghazni and Sayadabad substations were receiving electricity by observing the equipment in the substations and speaking with the staff there. Because the substations were receiving electricity, we determined that the line was delivering electricity. Further, we could hear sounds from the transmission line that indicated it was active. Both circuits of the Arghandi to Ghazni transmission line are energized: one circuit is transmitting 220 kilovolts of power, and the other is used for distribution after stepping down from 220 kilovolts to 20 kilovolts.¹⁴ According to DABS, the transmission line is providing about 3 megawatts of power to approximately 10,300 customers in Ghazni Province and 1,900 customers in Wardak Province.

A senior DABS official explained that while the line's maximum power capacity is 300 megawatts, it cannot deliver that amount because the electricity distribution system is not fully developed. Furthermore, the official said Afghanistan is still developing its own power generation capability and has limited sources for power

¹⁰ Each transmission tower has four legs, each of which stands on a separate concrete block. The four towers with poor concrete foundation workmanship are AS-234, AS-237, AS-240, and AS-243.

¹¹ Honeycombing is evidence of poor concrete consolidation, which may be caused by too dry a mix, incorrect aggregate size, or inadequate vibration when the concrete is being poured, leaving air bubbles in. Aggregate is granular material such as sand, gravel, and crushed stone that usually comprises about 60 to 75 percent of the concrete's volume.

¹² Pins are small metal pieces that connect two concrete forms.

¹³ See the DABS/92/ICB/004-Lot-1 contract, technical specification subsection 1.2.22.11.

¹⁴ The transmitted voltage must be reduced through use of a transformer before the electricity can be available for domestic commercial use.

importation. As a result, Afghanistan may not have as much electrical power to distribute as is needed in the marketplace.¹⁵ Tetra Tech officials said that although the PTEC transmission line has not been tested end-to-end, tests of individual sections show that the line can work satisfactorily.

In October 2018, a senior DABS official said that when the final warranty inspection is completed, DABS would be responsible for maintaining the transmission line. A senior DABS official said KEC International has been responsive to DABS's maintenance requests. In addition, for smaller repair work, DABS has mobile maintenance teams that make repairs and conduct maintenance along the transmission line.

CONCLUSION

KEC International's construction of the PTEC towers and transmission line between Arghandi and Ghazni is completed, but the four deficiencies we found resulted from poor contractor performance and, in one case, Tetra Tech's ineffective oversight. These deficiencies create safety hazards, and, if not corrected, they could disrupt the national power grid. USAID said DABS directed KEC International to correct the four deficiencies. KEC International added the four deficiencies to an updated punch list of items to address during the final warranty inspection. According to USAID, KEC International was scheduled to start the final warranty inspection on April 15, 2019. However, weather and security conditions may affect the inspection's start date and completion.

Although the Arghandi-Ghazni transmission line is energized, it is providing only about 3 megawatts of power to approximately 12,000 customers. Until the Afghan government fully develops power generation, power importation, and electricity distribution systems, the transmission line cannot be used to its full 300-megawatt capacity. As a result, most Afghans along the transmission line will continue to live and work with little or no power. DABS has hired maintenance personnel to repair the Arghandi-Ghazni transmission line as needed.

RECOMMENDATIONS

To protect the U.S. taxpayers' investment in PTEC, we recommend that the USAID Mission Director for Afghanistan work with Afghan Ministry of Finance and DABS officials to have KEC International take the following actions before the warranty expires at the final inspection:

- 1. Check all transmission tower locations and, where necessary,**
 - a. clear any trees or obstructions that threaten contact with the Arghandi-Ghazni transmission line;**
 - b. backfill soil around the tower foundations where soil settlement or erosion has occurred and add riprap; and**
 - c. refill or resurface any rough, uneven, or honeycombed concrete at the tower foundations.**

AGENCY COMMENTS

We provided a draft of this report to USAID for review and comment. USAID provided written comments, which are reproduced in appendix II. USAID also provided technical comments, which we incorporated into this report, as appropriate.

¹⁵ In addition to electricity transmission, the PTEC program also supports commercial power generation in Afghanistan and distribution activity. All three elements are necessary to provide electrical power for domestic use.

USAID concurred with our recommendation and described the actions it is taking to correct the four deficiencies we identified. On March 27, 2019, USAID gave us KEC International's updated punch list, which includes the deficiencies as items to address during the final warranty inspection. USAID stated that KEC International and DABS's final inspection was scheduled to start on April 15, 2019, subject to weather and security conditions. USAID added that it will not pay KEC International the 5 percent warranty retention held under the contract until DABS and Tetra Tech, its quality assurance contractor, provide written confirmation that KEC International has corrected the deficiencies. Similarly, USAID stated that it will not pay DABS the 5 percent warranty retention until KEC International corrects the deficiencies. On April 18, 2019, USAID informed us that KEC International, DABS, and Tetra Tech were on site and the final warranty inspection started on April 12, 2019.

We will close the recommendation when USAID provides evidence that the final inspection has been completed and the deficiencies corrected.

APPENDIX I - SCOPE AND METHODOLOGY

This report provides the results of SIGAR's inspection of the Power Transmission Expansion and Connectivity (PTEC) Arghandi-Ghazni transmission line. The objectives of this inspection were to determine whether the PTEC Arghandi-Ghazni towers and transmission line (1) were constructed according to contract requirements and applicable construction standards, and (2) are used and maintained. Specifically, we:

- reviewed contract documents, design submittals, quality assurance reports, and other relevant project documentation;
- interviewed U.S. Agency for International Development, Tetra Tech, and Da Afghanistan Breshna Sherkat officials regarding tower and transmission line construction, use, and maintenance; and
- made site visits along the transmission line on July 4 and August 21, 2018.

Because of security conditions along sections of the transmission line, we could only inspect transmission towers at locations close to the Arghandi, Ghazni, and Sayadabad substations. We selected a judgmental sample of 17 towers from those locations for inspection, although our inspectors inspected an additional tower for a total of 18.

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 PTEC Arghandi-Ghazni transmission line during two site visits in July and August 2018. We developed a standardized engineering evaluation checklist covering items required by the contract and design/specification documents. Our 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 them in accordance with SIGAR's policies and procedures to ensure that their work resulted in impartial, credible, and reliable information.

We conducted our inspection work in Kabul and at locations along the PTEC transmission line from September 2017 through April 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. AGENCY FOR INTERNATIONAL DEVELOPMENT



USAID | AFGHANISTAN
FROM THE AMERICAN PEOPLE

MEMORANDUM

April 10, 2019

TO: John F. Sopko
Special Inspector General for
Afghanistan Reconstruction (SIGAR)

FROM: Peter Natiello, Mission Director

SUBJECT: Mission Response to Draft SIGAR Inspection Report titled: "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"

REF: SIGAR Transmittal email dated March 26, 2019

USAID thanks SIGAR for the opportunity to comment on the above-reference draft inspection report.

The Arghandi-Ghazni transmission line is a 76-mile, 220-kilovolt double-circuit transmission line between Arghandi and Ghazni. It is part of the \$317 million on-budget Power Transmission Expansion and Connectivity (PTEC) project that is being implemented by Da Afghanistan Breshna Sherkat (DABS), the Government of Afghanistan's electrical utility, in collaboration with the Afghan Ministry of Finance. DABS awarded a \$59.2 million contract to KEC International (KEC) to construct the transmission line.

SIGAR's draft inspection report includes one recommendation. Set forth below is USAID's response to the recommendation.

U.S. Agency for International Development
Great Massoud Road
Kabul, Afghanistan

Tel: 202-216-6288 / 0700-108-001
Email: kabulusaidinformation@usaid.gov
<http://afghanistan.usaid.gov>

SIGAR Recommendation #1:

To protect the U.S. taxpayers' investment in PTEC, SIGAR recommends that the USAID Mission Director for Afghanistan work with Afghan Ministry of Finance (MoF) and Da Afghanistan Breshna Sherkat (DABS) officials to have KEC International take the following actions before the warranty expires at final inspection, and report the results to SIGAR within 90 days:

- 1. Check all transmission tower locations and, where necessary, Clear any trees or obstructions that threaten contact with the transmission line between Arghandi and Ghazni; Backfill soil around the tower foundations where soil settlement or erosion has occurred and add riprap; and Refill or resurface any rough, uneven, or honeycombed concrete at the tower foundations.*

USAID Response: USAID concurs with this recommendation.

Actions Taken/Planned:

On March 13, 2019, USAID requested that DABS require KEC to rectify the four deficiencies identified by SIGAR during its inspection. In addition, on March 27, 2019, USAID provided SIGAR with an updated "punch list" wherein the four deficiencies identified by SIGAR are included in the Final Inspection Checklist under DABS contract with KEC. Subject to weather and security conditions, the final inspection is scheduled to commence on April 15, 2019 and will be conducted jointly by DABS and KEC. Tetra Tech will observe the inspection as USAID's QA contractor. DABS will not pay KEC the five percent warranty retention held under its contract with KEC unless Tetra Tech confirms to USAID that all deficiencies, whether observed prior to or during the final inspection, have been corrected to KEC's contract specifications. Further, USAID will not reimburse DABS for five percent warranty retention until we receive written confirmation from DABS and Tetra Tech that the deficiencies have been corrected.

Based on the above, USAID requests that this recommendation be closed by SIGAR upon receipt of this USAID memorandum.

APPENDIX III - ACKNOWLEDGMENTS

Steven Haughton, Senior Inspection Manager

William Shimp, Inspector-in-Charge

Farid Akrami, Program Analyst

Ahmad Javed Khairandish, Civil Engineer

Yogin Rawal, Professional Engineer

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The mission of the Special Inspector General for Afghanistan Reconstruction (SIGAR) is to enhance oversight of programs for the reconstruction of Afghanistan by conducting independent and objective audits, inspections, and investigations on the use of taxpayer dollars and related funds. SIGAR works to provide accurate and balanced information, evaluations, analysis, and recommendations to help the U.S. Congress, U.S. agencies, and other decision-makers to make informed oversight, policy, and funding decisions to:

- improve effectiveness of the overall reconstruction strategy and its component programs;
- improve management and accountability over funds administered by U.S. and Afghan agencies and their contractors;
- improve contracting and contract management processes;
- prevent fraud, waste, and abuse; and
- advance U.S. interests in reconstructing Afghanistan.

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- Phone International: +1-866-329-8893
- Phone DSN International: 312-664-0378
- U.S. fax: +1-703-601-4065

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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