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Closeout Report Kandahar Helmand Power Project (KHPP)

COMPONENT 6 SUBCOMPONENT 1

Perform Inventory Assessment of Government- Furnished Equipment



Submitted by: Black & Veatch Special Projects Corporation (BVSPC)
Federal Services Division
Kandahar Helmand Power Project (KHPP)
USAID Contract Number 306-C-00-11-00506-00

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U.S. Agency for International Development (USAID)
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Kabul, Afghanistan

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List of Attachments

| Document # (if applicable) | Description (Note: The Section references below are the BVSPC-USAID Contract sections wherein specific deliverable requirements are located.) | Status | In Closeout Package? |
|-------------------------------|--|----------------|----------------------|
| a-01 | Contract Closeout Procedures Manual (CCPM). | Complete | Yes |
| a-02 | Security Plan [Section F.4.B(A)] - Site Specific. | Complete | Yes |
| a-03 | Implementation Plan - Work Plan (Section F.4.B-B). | Complete | Yes |
| a-04 | Health and Safety Plan and Procedures (Section C.4.6; Section F.4.B-C). | Complete | Yes |
| a-05 | Quality Control Plan (Section C.4.5; Section F.4.B-C). | Complete | Yes |
| a-06 | Warranty Administration Plan (Section C.4.11; FAR 52.246.21). | Not Applicable | N/A |
| a-07 | Construction Manual (Section C.4.10). | Not Applicable | N/A |
| a-08 | Construction and/or Final Schedule (Section C.4.10; Section F.4.B-C) - CLIN Specific. | Complete | N/A |
| a-09 | Photo Album. | Complete | Yes; d-04 |
| a-10 | Small Business Utilization Subcontracting Plan (Section H.23; Section J - Attachment 19; FAR 52.219-8). | Complete | Yes |
| a-11 | Operations and Maintenance Manuals (Section C.4.11; Section F.4.B-C). | Not Applicable | N/A |
| a-12 | Performance Monitoring and Evaluation Plan - each C/S, as stipulated by COR (Section C.4.13). | Not Applicable | N/A |
| a-13 | Branding Implementation Plan (Section F.4 B, C; Section D.2). | Complete | Yes |
| a-14 | Environmental Plan (Section H.16). | Complete | Yes |
| a-15 | Environmental Compliance Documentation Schedule (Section H.16). | Complete | Yes |
| a-16 | Environmental Closeout Report (Section H.16) - Site Specific. | Complete | Yes |
| a-17 | Environmental Reports (Section F.4.B-C) -- Annual Reports until Mod 10 (16-Feb-2013), and then Quarterly Reports. | Complete | Yes |
| a-18 | Weekly Highlight Report (Section F.4.B-B). | Complete | Yes |



| Document # (if applicable) | Description (Note: The Section references below are the BVSPC-USAID Contract sections wherein specific deliverable requirements are located.) | Status | In Closeout Package? |
|--|---|--|-----------------------|
| a-19 | Short Term Report - STTA Trip reports (Section F.4.B-B) - Site Specific. | Complete | Yes |
| a-20 | Design Submittals (Section F.4.B-C) - Site Specific. | Not Applicable | N/A |
| a-21 | Inspection and Equipment Test Reports (Section F.4.B-C) - Site Specific. | Complete | Yes |
| a-22 | Concrete Strength Tests: Steel reinforcements test reports (Section F.4.B-C) - Site Specific. | Not Applicable | N/A |
| a-23 | Testing and Commissioning Report (Section F.4.B-C) - Site Specific. | Not Applicable | N/A |
| a-24 | As-Built Construction Drawings (Section C.4.11; Section F.4.B-C) - Site Specific. | Not Applicable | N/A |
| a-25 | Training Reports (CLIN-Specific) - Site Specific. | Not Applicable | N/A |
| a-27 | Final Closeout Report (Section C.4.11; Section F.4.B-C). | Complete | Yes |
| Tasks and Deliverables for SubCLIN 6.1: Perform Inventory Assessment of GFE - Kajaki Unit 2 (Section F.4.A) | | | |
| b-10 | Task x: Warehouse Support Information | Complete | Yes |
| d-01 | List of long lead items and inspection procedures. | Complete | Yes |
| d-02 | Long lead items assessment report. | Complete under Subcomponent 6.2, and included in Attachment d-04 | Yes - Attachment d-04 |
| d-03 | Draft Final Assessment Report of all items in Attachment 11 (GFE). This should include equipment found to be missing, damaged, or inadequate for installation and operation. Also must include recommendations for repair or replacement. Time and cost estimates will be provided for each recommendation. | Complete | Yes |
| d-04 | Final GFE Assessment Report as amended 05 February 2014. | Complete | Yes |
| c-05 | Subcontract/Purchase Order Matrix which Indicates Closeout Status. | Complete | Yes |
| g-05 | Request For Consent for Property Disposition. | Not Applicable | N/A |
| g-06 | USAID Final Disposition Instructions. | Not Applicable | N/A |
| g-07 | Complete and Submit Handover/Disposal documents to USAID. | Not Applicable | N/A |
| m-01a | SUBSTANTIAL COMPLETION: 1) Certificate of Substantial Completion with Schedule of Defects (if applicable). | Complete | Yes |



| Document # (if applicable) | Description (Note: The Section references below are the BVSPC-USAID Contract sections wherein specific deliverable requirements are located.) | Status | In Closeout Package? |
|--------------------------------------|---|-------------------------|-----------------------------|
| m-01b | FINAL INSPECTION AND ACCEPTANCE 1) Final Punch List (if applicable). 2) Final Completion and Acceptance Certificate (FCA). 3) Draft Bilateral Agreement with Supporting Documentation. | Complete | Yes |
| m-01c | WARRANTY PERIOD AND FINAL WARRANTY INSPECTION: 1) Warranty Certificate | Not Applicable | N/A |
| m-02 | Prime Contract original signed copy in files KC. | Complete | Yes |
| m-03 | Copy of all Fully Executed Prime Contract Modifications and Change Orders in electronic folder. | Complete | Yes |
| m-04 | USAID Closing Statement Letter + BV Response Letter. | Not received from USAID | N/A |
| m-05 | Copy of Closeout Documentation - List of closeout documents handed over/uploaded to USAID. | Complete | Yes |

1 KANDAHAR HELMAND POWER PROJECT (KHPP) OVERVIEW

1.1 KHPP Background

The purpose of the Kandahar Helmand Power Project (KHPP) contract, issued by the United States Agency for International Development (USAID) on 09 December 2010, was to increase the supply and reliability of electrical power in the areas in southern Afghanistan served by the South East Power System (SEPS), particularly the City of Kandahar. The contract was to support the SEPS reconstruction and thereby increase the quality of life of people in Kandahar and Helmand Provinces. The KHPP was conceived as a critical component of the United States (US) government's Counterinsurgency (COIN) strategy in southern Afghanistan. KHPP is a part of a larger US government sponsored program involving multiple USAID Implementers, the US Army Corps of Engineers (USACE), and other Donors to improve the SEPS and connect it with other electrical grids in Afghanistan.

A reliable sustainable electric power generation, transmission, and distribution system in Kandahar and Helmand Provinces is an important objective of the Government of the Islamic Republic of Afghanistan (GIROA). The system is expected to fuel economic growth not currently possible, especially in Kandahar City, the second largest city in Afghanistan, and a center for education, health care, manufacturing, and transportation. Kandahar City has an electrical supply shortfall of at least 40 megawatt (MW) for its approximately 850,000 residents.

SEPS as a system is composed of multiple generation islands, aged transmission lines, and multiple distribution systems in southern Afghanistan serving 380,000 of the 1.7 million people residing in the region. Diesel generator sets and the Kajaki Hydroelectric Power Plant (HPP) provide the majority of the electric power generation in the system. The 222 kilometer (km) SEPS transmission system operates at 110 kilovolts (kV), medium voltage distribution at 20 kV, and low voltage distribution at 400 volts (V). Kandahar City represents the largest power demand node within SEPS.

The Kajaki HPP was the first significant generation source installed in SEPS. Supported by the US government, Kajaki HPP came online in the mid-1970s. Prior to execution of the KHPP contract, power arrived in Kandahar City through one aged 25 megavolt amperage (MVA) transformer located at the Kandahar Breshna Kot (BK) Substation. USAID began rehabilitation of the Kajaki HPP in 2003. At present, Kajaki HPP provides (at peak production) 32 MW (at high water periods), with 12 MW of power serving Kandahar City and 20 MW of power transmitted to the remaining distribution nodes served by the SEPS transmission backbone.

USAID facilitated the installation of fourteen (14) KTA-50 diesel generators at the BK Substation in late 2003 to supplement generation for Kandahar City during the Kajaki HPP rehabilitation. In 2008, five (5) additional diesel generators owned by Da Afghanistan Breshna Moasessa (now known as Da Afghanistan Breshna Sherkat, or

DABS) were installed at BK. This installation was done to increase short term generation capacity, as the rehabilitation efforts at Kajaki HPP had been prolonged due to continued insurgent activities and, the Kandahar City power supply was taking on increasing importance in International Security Assistance Forces' (ISAFs) counter-insurgency strategy in the area.

As of this report date, the BK Substation diesel generators have a combined generating capacity of 20.5 MW at peak due to new units either provided or installed by USAID. These units consist of the 10.5 MW MTU units, 5 MW of aged derated KTA-50 units, and 5 MW provided by aged derated QSK-60 units. The new 10.5 MW MTU units were installed and commissioned by the KHPP.

1.2 KHPP Summary of Scope of Work

The KHPP scope of work initially contained six (6) Components with ten (10) Subcomponents, outlined below which, integrated with other work on SEPS, were designed with the purpose of increasing and improving the sustainability and reliability of electric supply provided by the SEPS:

Component 1. Improve Kandahar Power Distribution System

- Subcomponent 1: Replace the Kandahar Breshna Kot Substation.
- Subcomponent 2: Refurbish Kandahar City Medium Voltage (MV) Distribution System.
- Subcomponent 3: Construct a new Kandahar East Substation to (1) enhance the reliability of the system serving Kandahar, and (2) serve as a receiving point for an expected link between the SEPS and the North East Power System (NEPS), which is Afghanistan's major source of lower cost imported power from the Central Asian Republics).
- Subcomponent 4: Construct a transmission line between the Kandahar Breshna Kot Substation and the new Kandahar East Substation.
- Subcomponent 5: Replacement of Aged Diesel Generators at the Breshna Kot Substation.

Component 2. Build Durai Junction Substation

- Subcomponent 1: Build a new Substation at Durai Junction.
- Subcomponent 2: Procure equipment for additional substations.

Component 3. Program Support and Program Management

Component 4. Transportation, Installation, Operation and Maintenance of Kandahar (also known as Shorandam) Industrial Park Diesel Power Plant (also known as SIPD)

Component 5. Rebuild the Kajaki Dam Substation and Local Distribution System

Component 6. Installation and Commission Kajaki Unit 2

- Subcomponent 1: Perform inventory assessment of Government Furnished Equipment (GFE).
- Subcomponent 2: Repair GFE, provide missing and additional new equipment for completing Kajaki Unit 2 installation.
- Subcomponent 3: Install and commission Kajaki Unit 2.

USAID issued the KHPP contract to Black & Veatch Special Projects Corporation (BVSPC) to provide engineering, procurement, construction, and all material, equipment and/or services necessary to successfully complete each of the Components and Subcomponents in accordance with the requirements of the contract.

BVSPC was tasked with developing appropriate engineering design and construction methodologies, as well as be responsible for procurement, design, construction, quality control, and testing and commissioning. BVSPC was also to provide relevant warranties for each Component and Subcomponent and the support services needed to implement those activities (security, life support, ground and air movements, etc.). One of the key deliverables of the KHPP was the sustainability of the infrastructure being developed. Drawing from previous operation and maintenance (O&M) training programs that BVSPC implemented on behalf of USAID through the Afghanistan Infrastructure Rehabilitation Program (AIRP), BVSPC was required to recommend and, in most instances, implement the training and skills development needed to sustain the efforts undertaken in this contract. In addition, BVSPC was to provide spare parts inventory necessary for DABS to perform the required operation and maintenance (O&M) of installed equipment in each Component and its Subcomponent. These recommendations were, in select instances, to be submitted to USAID prior to initiation of the respective subcomponent, and were to be based on the BVSPC assessment of the capability and intent of the recipient to execute required O&M functions.

The security situation in the southern region of Afghanistan changed as KHPP was implemented. While Regional Command Southwest and the U.S. Marines achieved substantial success in clearing the Upper Sangin Valley in late 2011, thus enabling KHPP to execute the first contractor convoy to Kajaki in several years, the region was impacted by significant increases in anti-government activity in 2011 to 2012 as the GIRoA, with ISAF support, increasingly imposed GIRoA control over the region. As a result, companies and organizations willing to work in the region significantly increased their pricing to accommodate higher risk and security costs by increasing their “risk premium” with their standard pricing. In addition, commodity costs and construction costs increased more rapidly than expected within Afghanistan during 2011. The unexpected cost increases impacted all implementing agencies from KHPP to USACE and diminished the collective capability of all agencies involved to meet initial objectives.

Recognizing that budgets would not allow delivery of all Components and Subcomponents, USAID, in concert with Regional Command South, reviewed the KHPP program in mid-2011 to determine what adjustments could be made to retain core program objectives aligned with COIN strategy while cutting projected costs. This review resulted in the realignment and descoping of select project activities. The net result was the descoping of Subcomponents 1.3, construction of a new Kandahar East Substation and Subsection 1.4, construction of a transmission line between the Kandahar BK Substation and the new Kandahar East Substation, with the intent to transfer these activities to USAID’s Power Transmission Expansion and Connectivity (PTEC) program then in development. In addition the scope of Subcomponent 1.2 was adjusted to eliminate planned additional connections to the Kandahar distribution system, thereby avoiding potential “negative COIN impact” until such time as additional sustainable non-diesel based generation could be brought to bear to supply additional customers (Kajaki Unit 2 and the NEPS to SEPS connection to bring lower cost imported hydropower).

The elimination of the Substation at Kandahar East and the transmission line was accompanied by a realignment of Subcomponent 1.5, the placement of 14 MTU generators, representing 21 MW of installed capacity at the Kandahar East location. With the implementation of the diesel power “bridging solution” in Kandahar City by US Forces Afghanistan, which added two (2) 10 MW diesel plants in early 2011 operating in separate island modes and, increasing concern regarding the sustainability of additional diesel generation within Kandahar City, the installation of the 14 MTU units was suspended until USAID could further assess the situation. Following the adjustment of KHPP scope, all six (6) original Components remained in the contract, but with the original ten (10) Subcomponents reduced to eight (8).

1.3 KHPP Contract Evolution

Table 1 lists a history of the changes which have occurred in the Prime Contract between BVSPC and USAID as the needs and demands adjusted due to changing ground conditions in order to maximize benefits to the people of Afghanistan.

Table 1: History of Changes in USAID Contract No. 306-C-00-11-00506-00

| Contract | Date | Description |
|--------------------------|-------------|--|
| Initial Contract Award | 09 Dec 2010 | This contract will support US Agency for International Development (USAID), Afghanistan Mission’s Kandahar Power Initiative (KPI). |
| Contract Modification 01 | 01 Feb 2011 | The purpose of this modification was to add the following in Section H: Special Provisions/Special Contract Requirements to the listed contract as follows: <ul style="list-style-type: none"> • Use of Synchronized Pre-deployment and Operational Tracker (SPOT) for Contractors Supporting a Diplomatic or Consular Mission outside the United States (Supplement to FAR 52.225-19). • Serious Incident Reporting in Afghanistan. • Gender Integration Requirements. |

| Contract | Date | Description |
|------------------------------|-------------|---|
| Contract Modification 02 | 17 Mar 2011 | The purposes of this modification were to: <ul style="list-style-type: none"> • Revise Section B.5: Indirect Cost based on BVSPC latest approved NICRA for FY2010. • Revise Section H.22: Consent to Subcontracts to incorporate the approved Subcontracting Plan dated 28 February 2011. • Change the project name from “Kandahar Power Initiative (KPI)” to “Kandahar Helmand Power Project (KHPP).” |
| Contract Modification 03 | 27 Jun 2011 | The purposes of this modification were to: <ul style="list-style-type: none"> • Incorporate the following clause: <i>The Contractor shall comply with and adhere to all USAID Afghanistan Implementing Partner Notices. Copies of the notices are provided to implementing partners at the time of issuance. Copies are also available upon request from your Cognizant Contracting Officer.</i> • Remind the Contractor of the recently issued Implementing Partner Notice No. OAA-IP- 2011 – 004 which incorporates Mission Order No. 201.04 entitled, "National Security Screening (Non- US Party vetting).” |
| Contract Modification 04 | 17 Jul 2011 | The purposes of this modification were to: <ul style="list-style-type: none"> • Incorporate no cost changes in Sections C and F. • Incorporate the FAR Clause 52.209-9 under PART II – CONTRACT CLAUSES. SECTION I – CONTRACT CLAUSES. |
| Contract Modification 05 | 19 Jul 2011 | The purpose of this modification was to provide funding in the amount of [REDACTED], thereby bringing the total obligated amount to [REDACTED]. |
| Partial Suspension of Work | 09 Aug 2011 | Partial suspension of work affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 3 • Component 1, Subcomponent 4 • Component 1, Subcomponent 5 • Component 4 |
| Change Order – Scope of Work | 08 Sep 2011 | SOW changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 3 • Component 1, Subcomponent 4 • Component 1, Subcomponent 5 • Component 4 |
| Change Order – Amendment 01 | 20 Sep 2011 | Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 3 |
| Change Order – Amendment 02 | 22 Sep 2011 | Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 5 - Diesel Generators |
| Change Order – Amendment 03 | 01 Oct 2011 | Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 5 – Diesel Generators • Extension of the Submission Deadline |
| Change Order – Amendment 04 | 13 Oct 2011 | Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 5 – Diesel Generators |
| Change Order – Amendment 05 | 16 Oct 2011 | Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 5 – Diesel Generators |
| Change Order – Amendment 06 | 22 Oct 2011 | Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 5 – Diesel Generators |

| Contract | Date | Description |
|------------------------------|-------------|---|
| Contract Modification 06 | 12 Nov 2011 | The purposes of this modification were to: <ul style="list-style-type: none"> • Provide incremental funding in the amount of [REDACTED], thereby increasing the total obligated amount from [REDACTED] to [REDACTED]. • Revise Section B.5: Indirect Cost based on BVSPC's approved provisional rates for FY2011. • Revise Sections C, F and J. |
| Change Order – Scope of Work | 06 Feb 2012 | SOW Changes affecting: <ul style="list-style-type: none"> • Component 1, Subcomponent 1 • Component 1, Subcomponent 5 |
| Contract Modification 07 | 26 Sep 2012 | The purposes of this modification were to: <ul style="list-style-type: none"> • Provide incremental funding in the amount of [REDACTED], thereby increasing the total obligated amount from [REDACTED] to [REDACTED]. • Modify PART I-THE SCHEDULE I. SECTION B-SUPPLIES OR SERVICES AND PRICE/COSTS, paragraph (c). |
| Contract Modification 08 | 29 Sep 2012 | The purposes of this modification were to: <ul style="list-style-type: none"> • Provide incremental funding in the amount of [REDACTED], thereby increasing the total obligated amount from [REDACTED] to [REDACTED]. • Modify PART I-THE SCHEDULE I. SECTION B-SUPPLIES OR SERVICES AND PRICE/COSTS, paragraph (c). |
| Contract Modification 09 | 30 Sep 2012 | The purposes of this modification were to: <ul style="list-style-type: none"> • Correction to Modification 8 to provide incremental funding in the amount of [REDACTED], thereby decreasing the total obligated amount from [REDACTED] to [REDACTED]. • Provide incremental funding in the amount of [REDACTED], thereby increasing the total obligated amount from [REDACTED] to [REDACTED]. |
| Partial Suspension of Work | 28 Jan 2013 | Partial suspension of work affecting: <ul style="list-style-type: none"> • Component 6, Subcomponent 3 |
| Contract Modification 10 | 14 Feb 2013 | The purpose of this modification was to revise Sections B, C, F, H, I, J and contract attachments. |
| Contract Modification 11 | 29 Sep 2013 | The purposes of this modification were to extend the period of performance from 30 September 2013 to 31 December 2013, revise budgets, and to clarify deliverables in multiple sections. |
| Contract Modification 12 | 24 Dec 2013 | The purpose of this modification was to add Subcomponent 6.4, Technical Assistance to USAID on Kajaki Unit 2 on budget implementation until 30 November 2015 and to extend all remaining Subcomponents to 28 February 2014. |
| Contract Modification 13 | 06 Aug 2014 | The purpose of this modification was to finalize agreements on fee, Durai Junction cure cost absorbed by BVSPC, applicable NICRA, and clarify Tasks and Deliverables as needed. |

See **Attachment m-03** for the documentation listed in the table above.

The key to effectiveness throughout the implementation of KHPP has been to maintain flexibility to meet new opportunities to enhance program impact as the succession of operations in southern Afghanistan evolved. In partnership with USAID, BVSPC maintained significant flexibility and made adjustments as needed and directed to deliver significant benefit to the people served by the SEPS.

1.4 KHPP Contract Coordination and Communication

At the inception of the KHPP, USAID coordinated the relationship with DABS-Kabul to maintain communication and reporting of KHPP activity and progress. BVSPC maintained communication and reporting of KHPP field activity with the DABS-Kandahar Director and his direct reports. BVSPC continued to coordinate and maintain liaison with Kandahar DABS, as well as Regional Command South (RC-S) and Regional Command Southwest (RC-SW) as requested by the COR and the USAID Onsite Managers (OSM). BVSPC worked directly with DABS in Kandahar and Helmand Provinces, throughout the implementation of the KHPP. The COP and the Transmission and Distribution Lead and Generation Lead (“Leads”) coordinated the communications with all stakeholders in Kandahar and Helmand addressing with each issues of concern as needed. The COP and COR communicated and coordinated all issues of implementation between themselves usually on a daily basis.

In order to establish USAID field presence for the project, and facilitate two-way reporting and communication, USAID designated one OSM for each of the two Regional Commands. The OSMs played a strong role in enhancing communications between all stakeholders in Kandahar and Helmand Provinces. The OSM reported to the COR, while maintaining coordination lines of communication with BVSPC Leads and Managers. The BVSPC Construction Managers and the O&M Managers, meanwhile, worked directly with their counterparts in Kandahar DABS, and also communicated mutual needs and concerns in coordination with Leads. The working relationships between BVSPC staff and the Kandahar DABS Director, senior managers, and DABS staff, in coordination with the COR and OSM, were consistently positive and productive.

2 SUBCOMPONENT 6.1: PERFORM INVENTORY ASSESSMENT OF GOVERNMENT FURNISHED EQUIPMENT ASSOCIATED WITH UNIT 2 AT THE KAJAKI HYDROELECTRIC DAM

2.1 Objectives

The original overall objective of Component 6 was to install and commission the Unit 2 Turbine at the Kajaki Hydroelectric Power Plant at the Kajaki Dam. The implementation of Component 6 was divided into three (3) phases. The objective of the first phase, Subcomponent 6.1, which is being addressed herein, was to assess the Kajaki HPP Unit 2 U.S. Government Furnished Equipment (GFE). British Military assistance in Operation “Eagle’s Summit” transported the GFE to Kajaki Dam camp in September 2008.

USAID provided a list of GFE transferred to BVSPC within Attachment 11 of the USAID-BVSPC KHPP Contract. Subcomponent 6.1 required KHPP to provide a team of specialists with proper test equipment to conduct an onsite audit to confirm the availability or lack thereof and, the condition after years of storage of Unit 2 equipment,

equipment for Units 1 and 3 upgrades, upgrade of plant control systems, and the Inlet valve for Unit 2 stored at the Kajaki Dam Camp site in Helmand Province.

The second Phase, Subcomponent 6.2, directed the repair of GFE, if required, and to provide missing and additional new equipment for completing Kajaki Unit 2 installation given COR approval.

Phase three, Subcomponent 6.3, directed Unit 2 to be installed and commissioned. Subcomponent 6.3 was held in abeyance until given explicit USAID Contract Officer approval to proceed.

2.2 Kajaki Hydro Power Plant History

USAID, in cooperation with the Government of Afghanistan, funded the installation and commissioning of two 16.5 MW hydroelectric turbine generating units in the Kajaki Hydro Power Plant (HPP) in 1975. The powerhouse was designed to house three (3) units. When built, Units 1 and 3 (16.5 MW each) were installed and commissioned and, a vacant, unimproved “skeleton” bay for the future erection of Unit 2 was built. After almost 35 years of continuous service to the people of southern Afghanistan, USAID funded the rehabilitation of Units 1 and 3 between 2004 and 2009, with the exception of controls, switchgear, metering, and protection.

In January 2005, a contract was awarded to China Machine-Building International Corporation (CMIC) for the design, manufacturing, and erection of an 18.5 MW hydroelectric turbine generator to be installed as Unit 2 at Kajaki HPP Powerhouse. The CMIC contract also included supply and installation of remaining control, switchgear, metering, and protection systems for Units 1 and 3 not provided with the units’ previous rehabilitation. The CMIC contract also included supply and installation of certain upgrades and replacement of powerhouse common equipment required due to additional power output of the station with the installation of Unit 2. The components were manufactured by various manufacturers and delivered by CMIC to Afghanistan.

Delivery of components began in the summer of 2006 and continued through 2008. Delivery was difficult due to the non-permissive environment created by anti-government elements along Route 611 to Kajaki. Some components were airlifted to the site; many of the large components were delivered by a British military supported convoy in September 2008, known as Operation “Eagle’s Summit.” Due to lack of warehouse space at Kajaki HPP, the Unit 2 components, as well as other CMIC equipment supplied, were placed into storage under tarpaulins and inside shipping containers. These components have been stored in this manner since their delivery. Initial site preparation and civil work for the installation of Unit 2 using a small CMIC construction crew commenced in March 2008. CMIC employees withdrew from the Kajaki work site due to security concerns in November 2008 without performing any significant work.

The KHPP contract called for BVSPC to complete the Kajaki Unit 2 project initiated by CMIC, starting with the equipment and materials delivered to the Kajaki HPP. As the RFP stated, “All components of the Unit 2 turbine generator installation, upgrades for Units 1 and 3, common equipment upgrades, improvements to Tangi Substation, and spare parts are now believed to be onsite.” Limited inventory of this equipment had been made by others, and was provided to the BVSPC as a GFE Inventory List.

The Statement of Work in the Prime Contract applicable to Subcomponent 6.1 identified the need to assess the condition of the existing GFE before proceeding with the balance of the work associated with the installation of Unit 2 and upgrades to Units 1 and 3 switchgear, controls, metering, and protection. A detailed inventory and thorough condition assessment of the GFE stored at the Kajaki site was necessary to: (1) determine the condition of the GFE, (2) determine the extent of repair and/or replacement which may be required, and (3) determine what may be missing and require replacement. There was also a small quantity of GFE for Kajaki HPP stored in Kabul. The equipment stored in Kabul was moved to the KHPP laydown yard in Kandahar and ultimately to the Kajaki Dam Camp laydown area.

2.3 Subcomponent 6.1 Tasks and Deliverables Modifications and Change Order History

Table 2 lists, by date, USAID Task and Deliverables modifications to Subcomponent 6.1 which were implemented. The final Tasks and Deliverables agreed upon between USAID and BVSPC following modifications and change orders are shown in **bold** within Table 2.

Table 2: Subcomponent 6.1 – USAID Contract Modification History

| Source & Date | Task | Change & Date |
|---|--|--|
| Original Contract 09 Dec 2010 | Task i: Identify long lead items and items that may have serviceability issues due to storage duration. At a minimum, these items will include oil filled transformers, Unit 2 exciter, generator shaft, turbine shaft, and inlet valve. Provide inspection and testing procedures to determine serviceability of these components. Examples of these procedures include Doble tests, megger tests, visual inspection by structural engineer, oil sample analysis, or other industry standard tests. | |
| Contract Modification 10 14 Feb 2013 | Task i: Identify long lead items and items that may have serviceability issues due to storage duration. At a minimum, these items will include oil filled transformers, Unit 2 exciter, generator shaft, turbine shaft, and inlet valve (multiple cracks are visible in both hubs of the inlet valve). Provide inspection and testing procedures to determine serviceability of these components. Examples of these procedures include Doble tests, megger tests, visual inspection by structural engineer, oil sample analysis, or other industry standard tests. | Deleted and replaced task; however, no change 14 Feb 2013 |

| Source & Date | Task | Change & Date |
|--|---|--|
| Contract Modification 11 29 Sep 2013 | Task i: Identify long lead items and items that may have serviceability issues due to storage duration. At a minimum, these items will include oil filled transformers, Unit 2 exciter, generator shaft, turbine shaft, and inlet valve (multiple cracks are visible in both hubs of the inlet valve). Provide inspection and testing procedures to determine serviceability of these components. Examples of these procedures include Doble tests, megger tests, visual inspection by structural engineer, oil sample analysis, or other industry standard tests. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task ii: Inspect long lead items per approved inspection procedure. | |
| Contract Modification 10 14 Feb 2013 | Task ii: Inspect long lead items per approved inspection procedure. | Deleted and replaced task; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task ii: Inspect long lead items per approved inspection procedure. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task iii: Verify the physical presence of remaining items listed in Attachment 11. | |
| Contract Modification 10 14 Feb 2013 | Task iii: Verify the physical presence of remaining items listed in Attachment 11. | Deleted and replaced task; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task iii: Verify the physical presence of remaining items listed in Attachment 11. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task iv: Assess the condition of the remaining items in Attachment 11 for their intended purpose. Notify the government if it is believed unpacking an item creates a risk to serviceability or, if item is "off the shelf" and easily procured if determined to be unserviceable during installation. | |
| Contract Modification 10 14 Feb 2013 | Task iv: Assess the condition of the remaining items in Attachment 11 for their intended purpose. Notify the government if it is believed unpacking an item creates a risk to serviceability or, if item is "off the shelf" and easily procured if determined to be unserviceable during installation. | Deleted and replaced task; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task iv: Assess the condition of the remaining items in Attachment 11 for their intended purpose. Notify the government if it is believed unpacking an item creates a risk to serviceability or, if item is "off the shelf" and easily procured if determined to be unserviceable during installation. | Deleted and replaced task; however, no change 29 Sep 2013 |

| Source & Date | Task | Change & Date |
|---|---|--|
| Original Contract 09 Dec 2010 | Task v: Identify any shortages, or damaged or inadequate equipment. Recommend repair or new procurement for each item. Estimate time and costs for each recommendation. | |
| Contract Modification 10 14 Feb 2013 | Task v: Identify any shortages or damaged, or inadequate equipment. Recommend repair or new procurement for each item. Estimate time and costs for each recommendation. | Deleted and replaced task; however, no change 14 Feb 2013 |
| Contract Modification 11 29-Sep-13 | Task v: Identify any shortages or damaged, or inadequate equipment. Recommend repair or new procurement for each item. Estimate time and costs for each recommendation. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task vi: Test bulk lubricating oil, hydraulic oil, and insulating oil to industry standard routine physical properties appropriate to the fluid type and use. The Contractor shall submit standards to the government for approval prior to oil sampling. | |
| Contract Modification 10 14 Feb 2013 | Task vi: Test bulk lubricating oil, hydraulic oil, and insulating oil to industry standard routine physical properties appropriate to the fluid type and use. The Contractor must submit standards to the Government for approval prior to oil sampling. | Deleted and replaced task; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task vi: Test bulk lubricating oil, hydraulic oil, and insulating oil to industry standard routine physical properties appropriate to the fluid type and use. The Contractor must submit standards to the Government for approval prior to oil sampling. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task vii: Conduct audit using available onsite lifting and moving equipment or provide equipment as necessary. Note: This may require repair work to render the equipment safe for operation. Utilities are available at the Kajaki camp site adjacent to the equipment storage area. An abandoned structure available to the assessment team is in the vicinity of the laydown yard. This structure no longer has a roof, and is available "as is/where is." Due to security conditions offsite, there is no alternative at this time. | |
| Contract Modification 10 14 Feb 2013 | Task vii: Conduct the audit using available onsite lifting and moving equipment or provide equipment as necessary. Note: This may require repair work to render the equipment safe for operation. Utilities are available at the Kajaki camp site adjacent to the equipment storage area. An abandoned structure available to the assessment team is in the vicinity of the laydown yard. The structure no longer has a roof, and is available "as is/where is." Due to security conditions offsite, there is no alternative facility available at this time. | Changed wording 14 Feb 2013 |

| Source & Date | Task | Change & Date |
|--|--|--|
| Contract Modification 11 29 Sep 2013 | Task vii: Conduct the audit using available onsite lifting and moving equipment or provide equipment as necessary. Note: This may require repair work to make the equipment safe for operation. Utilities are available at the Kajaki Camp Site adjacent to the equipment storage area. An abandoned structure available to the assessment team is in the vicinity of the laydown yard. The structure no longer has a roof, and is available "as is/where is." Due to security conditions offsite, there is no alternative facility available at this time. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task viii: Request utilities and equipment in the Kajaki Powerhouse, if needed, from the DABS staff. The Contractor shall advise the COTR of all such requests. | |
| Contract Modification 10 14 Feb 2013 | Task viii: Request utilities and equipment in the Kajaki Powerhouse, if needed, from the DABS staff. The Contractor must advise the COR of all such requests. | Changed wording 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task viii: Request utilities and equipment in the Kajaki Powerhouse, if needed, from the DABS staff. The Contractor must advise the COR of all such requests. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task ix: Identify to the COTR any equipment removed from the site. | |
| Contract Modification 10 14 Feb 2013 | Task ix: Identify to the COR any equipment removed from the site. | Changed wording 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task ix: Identify to the COR any equipment removed from the site. | Deleted and replaced task; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Task x: Return all items following the audit to their pre-audit storage containers. If more suitable storage conditions are identified by the Contractor, they will be recommended to the COTR. | |
| Contract Modification 10 14 Feb 2013 | Task x: Return all items following the audit to their pre-audit storage containers. If more suitable storage conditions are identified by the Contractor, they will be recommended to the COR. | Changed Wording 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Task x: Return all items following the audit to their pre-audit storage containers. If more suitable storage conditions are identified by the Contractor, they will be recommended to the COR. | Deleted and replaced task; however, no change 29 Sep 2013 |

| Source & Date | Task | Change & Date |
|---|--|--|
| Original Contract 09 Dec 2010 | <p>Task xi: Prepare a Final Assessment Report describing efforts undertaken above and including:</p> <ol style="list-style-type: none"> 1. An item-by-item analysis of GFE quality and assessment of the suitability of each for utilization at the site, or recommendation for repair/re-procurement, including a schedule for repair/re-procurement (as necessary and appropriate); 2. A civil works update, comprising rough order of magnitude estimates of materials volumes and heavy equipment required for work completion. 3. A material transportation plan (e.g., for batch plant, cement/sand/aggregate delivery) which provides for the possible coordinated movement with the military of certain materials to the site as early as 01 April 2011. 4. Cost estimate for the Subcomponents 2 and 3 below, including schedules and a Gantt chart for all aspects of Kajaki Unit 2 installation. 5. Summary of industry tests utilized and the results of these tests, photographic record of the inventory with the labels enabling items to be referenced against the equipment list, and plan view of laydown yard detailing container location or item location. | |
| Contract Modification 10 14 Feb 2013 | <p>Task xi: Prepare a Final Assessment Report, describing efforts undertaken above and including:</p> <ol style="list-style-type: none"> 1. Item-by-item analysis of GFE quality and assessment of the suitability of each for utilization at the site or, recommendation for repair/re-procurement, including a schedule for repair/re-procurement (as necessary and appropriate). 2. Civil works update comprising rough order of magnitude estimates of materials volumes and heavy equipment required for work completion. 3. Material transportation plan (e.g., for batch plant, cement/sand/aggregate delivery) which provides for the possible coordinated movement with the military of certain materials to the site. 4. Cost estimate for the Subcomponents 2 and 3 below, including schedules and a Gantt chart for all aspects of Kajaki Unit 2 installation. 5. Summary of industry tests utilized and the results of these tests, photographic record of the inventory with the labels enabling items to be referenced against the equipment list, and plan view of laydown yard, detailing container location or item location. <p>An Excel spreadsheet formatted similarly to Attachment 11 will be submitted with each report. Remarks and detailed information will be submitted with an accompanying Word document.</p> | Changed Statement of Work 14 Feb 2013 |

| Source & Date | Task | Change & Date |
|---|---|--|
| Contract Modification 11 29 Sep 2013 | <p>Task xi: Prepare a Final Assessment Report describing efforts undertaken above, and including:</p> <ol style="list-style-type: none"> 1. Item-by-item analysis of GFE quality and assessment of the suitability of each for utilization at the site or, recommendation for repair/re-procurement, including a schedule for repair/re-procurement (as necessary and appropriate). 2. Civil works update, comprising rough order of magnitude estimates of materials volumes and heavy equipment required for work completion. 3. Material transportation plan (e.g., for batch plant, cement/sand/aggregate delivery) that provides for the possible coordinated movement with the military of certain materials to the site. 4. Cost estimate for the Subcomponents 2 and 3 below, including schedules and a Gantt chart for all aspects of Kajaki Unit 2 installation. 5. Summary of industry tests utilized and the results of these tests, photographic record of the inventory with the labels enabling items to be referenced against the equipment list, and plan view of laydown yard, and plan view of laydown yard detailing container location or item location. <p>An Excel spreadsheet formatted similarly to Attachment 11 will be submitted with each report. Remarks and detailed information will be submitted with an accompanying Word document.</p> | <p>Deleted and replaced deliverable; however, no change 29 Sep 2013</p> |
| Original Contract 09 Dec 2010 | <p>Task xii: An Excel spreadsheet formatted similarly to Attachment 11 will be submitted with each report. Remarks and detailed information will be submitted with an accompanying Word document.</p> | <p>Combined with Task xi 14 Feb 2013</p> |
| Source & Date | Deliverable | Change & Date |
| Original Contract 09 Dec 2010 | Deliverable 1: List of long lead items and inspection procedures – 30 days following NTP. | |
| Contract Modification 10 14 Feb 2013 | Deliverable 1: List of long lead items and inspection procedures – 30 days following NTP. | Deleted and replaced deliverable; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | <p>Deliverable 1: List of long lead items and inspection procedures – 30 days following NTP.</p> | Deleted and replaced deliverable; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Deliverable 2: Long lead items assessment report – within 30 days of government approval of inspection procedure. | |

| Source & Date | Task | Change & Date |
|---|---|---|
| Contract Modification 10 14 Feb 2013 | Deliverable 2: Long lead items assessment report – within 30 days of government approval of inspection procedures. | Deleted and replaced deliverable; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Deliverable 2: Long lead items assessment report – within 30 days of government approval of inspection procedures. | Deleted and replaced deliverable; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Deliverable 3: Draft Final Assessment Report of all items in attachment of GFE. This should include equipment found to be missing, damaged or inadequate for installation and operation; recommendations for repair or replacement provided. Time and cost estimates will be provided for each recommendation. – 15 Feb 2011. | |
| Contract Modification 10 14 Feb 2013 | Deliverable 3: Draft Final Assessment Report of all items in Attachment 11 (GFE). This should include equipment found to be missing, damaged, or inadequate for installation and operation. Also must include recommendations for repair or replacement. Time and cost estimates will be provided for each recommendation. – 15 Feb 2011. | Changed Wording 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Deliverable 3: Draft Final Assessment Report of all items in Attachment 11 (GFE). This should include equipment found to be missing, damaged, or inadequate for installation and operation. Also must include recommendations for repair or replacement. Time and cost estimates will be provided for each recommendation. – 15 Feb 2011 | Deleted and replaced deliverable; however, no change 29 Sep 2013 |
| Original Contract 09 Dec 2010 | Deliverable 4: Final Assessment Report – within 30 days of receipt of draft report. | |
| Contract Modification 10 14 Feb 2013 | Deliverable 4: Final Assessment Report – within 30 days of receipt of draft report. | Deleted and replaced deliverable; however, no change 14 Feb 2013 |
| Contract Modification 11 29 Sep 2013 | Deliverable 4: Final Assessment Report – within 30 days of receipt of draft report. | Deleted and replaced deliverable; however, no change 29 Sep 2013 |

2.4 Milestones

Table 3 lists the multiple milestone events applicable to Component 6.1 which were scheduled and achieved by the dates provided.

Table 3: Subcomponent 6.1 – Milestone Events Scheduled and Achieved

| Milestone | Original Schedule | Achieved Date |
|--|--|---|
| Deliverable 1: List of long lead items and inspection procedures. | 30 days following NTP* 04 Jan 2011 | 05 Jan 2011 |
| Deliverable 2: Long lead items assessment report. | Within 30 days of government-approved inspection | 16 Feb 2011 |
| Deliverable 3: Draft Assessment Report of all items in Attachment 11 (GFE). This should include equipment found to be missing, damaged, or inadequate for installation and operation. Also must include recommendations for repair or replacement. Time and cost estimates will be provided for each recommendation. | Draft after initial assessment: 15 Feb 2011 Draft after 2 nd assessment: 29 Aug 2011 | 16 Feb 2011 29 Aug 2011 |
| Deliverable 4: Final Assessment Report: This deliverable was updated by request from USAID. A joint (KHPP, DABS and USAID's quality control implementer) final inventory was undertaken. An amended GFE Final Assessment Report was produced to include the confirmed joint inventory and updated engineering and design information as requested. An amended report was submitted 05 February 2014. | 30 days after receiving draft report with comments | 31 Jan 2012 – Amended 05 February 2014 |
| Report Deliverable 1: Plans and procedures for inventory and assessment of GFE – checklists, standards, procedures, method statements, and/or other relevant details, including a time line and sequencing of work for unpacking inventory, testing, procuring missing and new equipment; ensuring full accounting and safe-keeping of all equipment for installation. | 45 days from NTP | 05 Jan 2011 |

*Notice to Proceed (NTP) received 09 December 2010.

Milestones taken from Schedule of Deliverables of Contract Modification 11.

2.5 Deliverables

As modifications occurred in Component 6, the contract Deliverables under Component 6.1 also changed, however marginally. Table 4 lists the deliverables applicable to Component 6.1, the method by which their delivery was verified, and the location in the appendices of documentation of the Deliverable.

Table 4: Subcomponent 6.1 – Contract Deliverables

| ACTIVITY NO. | DELIVERABLE | METHOD OF VERIFICATION | STATUS | ATTACHMENT |
|----------------------|---|------------------------|----------|----------------------------------|
| 1 | List of long lead items and inspection procedures (titled “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Plan”). | Document Review | Complete | d-01 |
| 2 | Long lead items assessment (included in “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report – FINAL”). | Document Review | Complete | Part of Assessment Report (d-04) |
| 3 | Draft Assessment Report (titled “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report – FINAL DRAFT”). | Document Review | Complete | d-03 |
| 4 | Final Assessment Report (titled “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report – FINAL”). | Document Review | Complete | d-04 |
| Report Deliverable 1 | Plans and procedures for inventory and assessment of GFE (titled “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Plan.” | Document Review | Complete | d-01 |

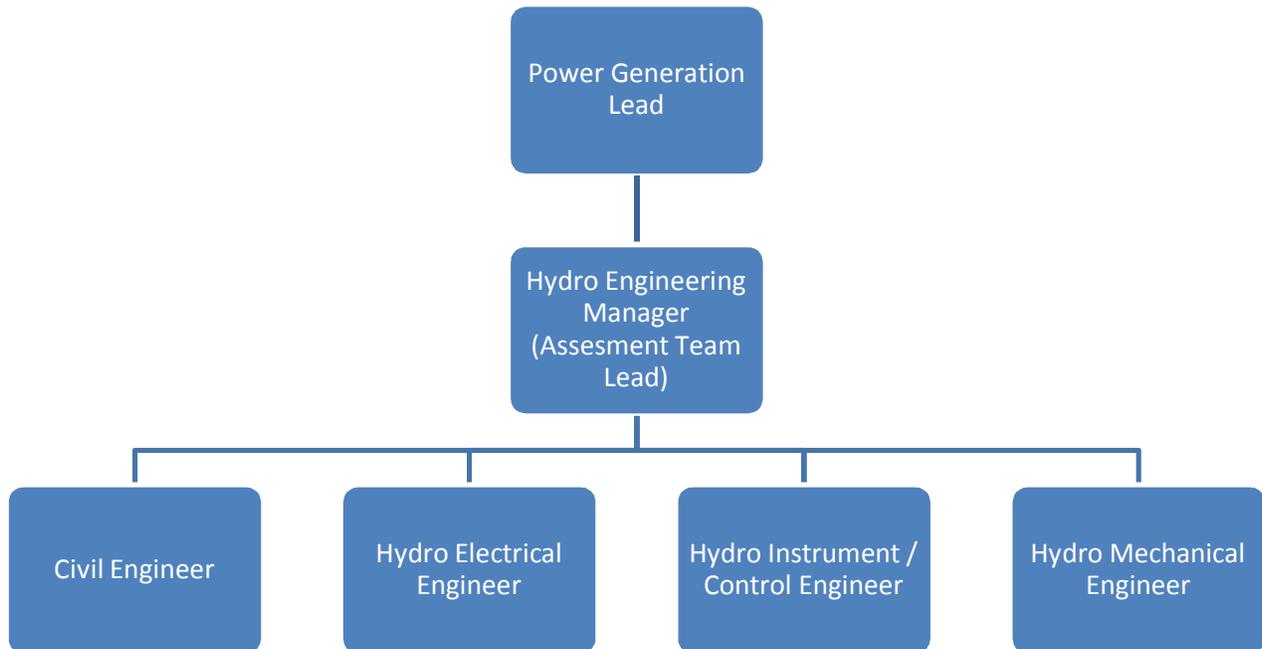
Deliverables as of Contract No. 306-C-00-11-00506-00 Modification 11.

Electronic copies of all deliverable documents are included in CDs/DVDs submitted with this report.

3 PROJECT EXECUTION

3.1 Organizational Structure and Management Details

An organizational chart of KHPP Component 6, Subcomponent 1: Hydro Assessment Team is illustrated in the following chart:



3.1.1 Sector Lead – Power Generation

The Sector Lead was based at the Kajaki Dam Camp during the performance and completion of Component 6 Subcomponent 1. The Sector Lead assumed the overall authority for Subcomponent 6.1 implementation, and was responsible for all related contract management, client coordination and reporting, correspondence, invoice approval, mobilization of personnel, approval of home office personnel applied to Subcomponent 6.1, and other project management activities in coordination with KHPP Program Management.

3.1.2 Hydro Engineering Manager

The Hydro Engineering Manager was based at Black & Veatch’s (B&V’s) Overland Park, Kansas, USA office. The Hydro Engineering Manager was responsible for the development of the component’s assessment plan, inspection procedures, definition of testing baselines, compilation of reports and communication, and support of the Assessment Team and Power Generation Lead.

3.1.3 Camp Risk Manager

The Camp Risk Manager reported to the KHPP Project Security Manager and was based at the Kajaki Dam Camp located in Kajaki, Afghanistan. The Camp Risk Manager was responsible for all security, security personnel, and security functions at the Kajaki Dam site.

3.1.4 Civil Engineer

The Civil Engineer on the Assessment Team reported to the Hydro Assessment Team Lead and was based at the Kajaki Dam Camp site. The Civil Engineer was responsible for reviewing conditions of batch plant, sources of aggregate and water for concrete production, and structural condition of the powerhouse area to receive Unit 2.

3.1.5 Hydro Electrical Engineer/Hydro Assessment Team Lead

The Hydro Electrical Engineer also served as the Hydro Assessment Team Lead and compiled the report data for submission to the Hydro Engineering Manager. The Hydro Electrical Engineer reported to the Power Generation Lead and was based at the Kajaki Dam Camp site. The Hydro Electrical Engineer was responsible to review, assess, and report on the electrical condition of the GFE for the Unit 2 HPP. This role also included making recommendations to improve the performance of existing Units 1 and 3.

3.1.6 Hydro Instrumentation and Controls Engineer

The Hydro Instrumentation and Controls Engineer reported to the Hydro Assessment Team Lead and was based at the Kajaki Dam Camp site. The Hydro Instrumentation and Controls Engineer was responsible for reviewing, assessing, and reporting the condition and viability of the controls for the furnished Hydro Unit 2 equipment. This role also included making recommendations to improve the performance of said equipment and existing equipment, as well as methods of interconnecting the controls for all three Hydro units.

3.1.7 Hydro Mechanical Engineer

The Hydro Mechanical Engineer reported to the Hydro Assessment Team Lead and was based at the Kajaki Dam site. The Hydro Mechanical Engineer was responsible to conduct a mechanical review and assessment of the GFE mechanical equipment, report on findings, and submit recommendations.

3.1.8 Home Office Program Management Resources

Home Office resources were available to perform project support throughout the duration of the project. In addition, accounting functions and financial reviews of the Project were performed at the BVSPC Federal Services Division Headquarters in Overland Park, Kansas, USA.

3.2 Execution of Work

The implementation of the work under Subcomponent 6.1 occurred as follows:

1. In December of 2010, BVSPC was awarded Contract No. 306-C-00-11-00506-00 by USAID's Afghanistan Mission to perform the Kandahar Power Initiative (later re-named Kandahar Helmand Power Project).
2. BVSPC immediately began executing activities under this Subcomponent.

The inventory and condition assessment was performed in two phases due to the unavailability of functioning material handling equipment required to access much of the equipment and materials stored in stacked shipping containers. USAID was informed of these constraints, and directed that KHPP proceed with an initial assessment and return to complete the assessment when the material handling equipment could be made available. The initial assessment was performed 11 January through 16 February 2011, and represented approximately 30 percent of the total assessment required. A draft inventory and condition assessment report was submitted to USAID on 16 February 2011. A second assessment was performed 18 July through 21 August 2011 following repair of the onsite material handling equipment and certification consistent with USAID KHPP contractual requirements. The balance of the inventory and condition assessment was incorporated into a draft Final Report submitted to USAID on 29 August 2011.

USAID provided review comments on the draft final report on 11 October 2011 (USAID Letter No. OAA-BVSPC-2011-00271). KHPP responded to comments and reviewed the report and comments with USAID during a meeting in Kandahar on 17 November 2011. BVSPC provided the Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report – FINAL on 31 January 2012 (Final Report). The Final Report incorporated all comments, and included revised schedule and cost estimates dated 11 November 2011.

The Final Report presented the findings of the inventory and condition assessment of GFE at the Kajaki HPP for Unit 2 and electrical and control upgrades to Units 1 and 3. In the process of performing the scope of work applicable to Subcomponent 6.1, KHPP determined additional upgrades to Units 1 and 3 which could significantly improve the reliability and generating capacity of Kajaki HPP. Although beyond the scope of the required assessment, these improvements were a logical “fall-out” of work within the scope, and were provided in the Final Assessment Report which incorporated all comments and issues raised by USAID.

Subsequent to the Final Report, under Component 6, Subcomponent 3, BVSPC updated the Unit 2 GFE inventory in a joint inventory carried out by KHPP, DABS, and USAID by its quality control implementer. As a result, the Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report (Assessment Report) was amended 05 February 2014, and is attached as **Appendix d-04**.

The Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report (Assessment Report) included all of the following activities unless otherwise noted. Specific activities were completed as described below.

Task i: *Identify long lead items and items that may have serviceability issues due to storage duration. At a minimum, these items will include oil filled transformers, Unit 2 exciter, generator shaft, turbine shaft, and inlet valve (multiple cracks are visible in both*

hubs of the inlet valve). Provide inspection and testing procedures to determine serviceability of these components. Examples of these procedures include Doble tests, megger tests, visual inspection by structural engineer, oil sample analysis, or other industry standard tests.

Status: COMPLETE

Identified long lead items and items that may have serviceability issues due to storage duration, including oil filled transformers, Unit 2 exciter, generator shaft, turbine shaft, and inlet valve (multiple cracks are visible in both hubs of the inlet valve). Provided inspection and testing procedures that determined serviceability of those components. Details are documented in the “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Plan,” provided as Attachment d-01.

Task ii: *Inspect long lead items per approved inspection procedure.*

Status: COMPLETE

Long lead items were inspected per approved inspection procedures as documented in the “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Plan” provided as Attachment b-13. Results of the inspections are included in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report” provided as Attachment d-04.

Task iii: *Verify the physical presence of remaining items listed in Attachment 11.*

Status: COMPLETE

The physical presence of items listed in Attachment 11 was verified and documented in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report,” provided as Attachment d-04. An integrated inventory accounting for the location of items on Attachment 11 and Attachment 12 of the original prime contract was also produced upon request of USAID. This Final Joint Inventory is presented as Attachment 2 of the Bilateral Agreement, and is included in m-01b of the Closeout Package.

Task iv: *Assess the condition of the remaining items in Attachment 11 for their intended purpose. Notify the government if it is believed that unpacking an item creates a risk to serviceability or if item is "off the shelf" and easily procured if found to be unserviceable during installation.*

Status: COMPLETE

The condition of items in Attachment 11 was assessed, and it was confirmed the equipment was fit to be utilized for their intended purpose(s). These findings were documented in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report,” provided as Attachment d-04.

Task v: *Identify any shortages, damaged, or inadequate equipment. Recommend repair or new procurement for each item. Estimate time and costs for each recommendation.*

Status: COMPLETE

Equipment shortages and damaged or inadequate equipment were identified. Recommendations for repair or new procurement were addressed for each item. Procurement lead times and cost estimates for those items were provided in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report” provided as Attachment d-04.

Task vi: *Test bulk lubricating oil, hydraulic oil, and insulating oil to industry standard routine physical properties appropriate to the fluid type and use. The Contractor must submit standards to the Government for approval prior to oil sampling.*

Status: COMPLETE

Tested bulk lubricating oil, hydraulic oil, and insulating oil to industry standard routine physical properties appropriate to the fluid type and use. BVSPC submitted testing standards to the government for approval prior to oil sampling as part of the “Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Plan,” provided as Attachment b-13. Results of the testing are included in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report,” provided as Attachment d-04.

Task vii: *Conduct the audit using available onsite lifting and moving equipment or provide equipment as necessary. It is noted that this may require repair work to make the equipment safe for operation. Utilities are available at the Kajaki Camp Site adjacent to the equipment storage area. In the vicinity of the laydown yard, there is an abandoned structure available to the assessment team. The structure no longer has a roof. It is available “as is/where is.” Due to security conditions off-site, there is no alternative facility available at this time.*

Status: COMPLETE

Conducted the audit using available onsite lifting and moving equipment, or provided equipment as required. Results of the audit are included in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report,” provided as Attachment d-04.

Task viii: *Request utilities and equipment in the Kajaki Powerhouse, if needed, from the DABS staff. The Contractor must advise the COR of all such requests.*

Status: NOT REQUIRED

BVSPC did not require utilities or additional equipment in the Kajaki Powerhouse beyond what was already available.

Task ix: *Identify to the COR any equipment removed from the site.*

Status: NOT REQUIRED

No GFE was removed from the site; therefore, equipment identification was not required, no equipment was removed from the site, and COR was not informed as required.

Task x: *Return all items following the audit to their pre-audit storage containers. If more suitable storage conditions are identified by the Contractor, they will be recommended to the COR.*

Status: COMPLETE

During the initial assessment of the Kajaki Dam Unit 2 GFE materials for Unit 2 (reference of 'all items' above), each draft of the assessment report, as well as the two accepted final versions, one dated 31 January and one dated 5 February 2014, discuss the storage conditions before the assessment and after the assessment. Both of these reports were accepted by the COR. The acceptance letters of each of these reports are included as **Attachment b-10**. These reports demonstrate that BVSPC has met the requirements to 'Return all items following the audit to their pre-audit storage containers. If more suitable storage conditions are identified by the Contractor, they will be recommended to the COR.'

Based on the recommendations of the January 2012 Assessment Report, USAID included the camp improvements scope of work for Subcomponent 6.3. As part of this scope of work addition, the following site improvements were made to ensure that the materials were located in suitable storage conditions for long term storage. This work, including the storage of all GFE, was included in each of the site inspections including 6.3 substantial completion inspections, 6.3 final completion inspection, and the 6.2 GFE inventories conducted. The final GFE inspection and inventory was conducted on 30 October – 1 November 2013, as documented by EQUALS.

Table 5: Task x Procurements Related to Warehouse Construction

| Contract | Title | Scope of Work Pertinent to task x | Consent Required | Award Completion Date |
|-----------------|--|--|-------------------------|------------------------------|
| KJHD.78.1322 | Kajaki Camp Upgrade: Expat House, Roof Repairs, and Nonpotable Water Filtration System | Roof support and sealing work completed. Electronic equipment was stored in the warehouse | Yes | 28 May 2012 |
| KJHD.78.2011 | Kajaki Camp Upgrade: Warehouse | Doors, windows, and all other openings were sealed. Locking devices were included for doors and windows. | No | 23 Sep 2013 |
| KJHD.78.2011 | Kajaki Camp Upgrade: GFE Laydown Yard | Grading and compaction of laydown areas, addition of | No | 9 Oct 2013 |

| | | | | |
|--|--|--|--|--|
| | | gravel, addition of fencing including razor wire | | |
|--|--|--|--|--|

The details related to the new location of all GFE items are fully described in the “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report,” provided as Attachment d-04.

Task xi: *Prepare a Final Assessment Report, describing efforts undertaken above, and including:*

1. *Item-by-item analysis of GFE quality and assessment of the suitability of each for utilization at the site or, recommendation for repair/re-procurement, including a schedule for repair/re-procurement (as necessary and appropriate).*
2. *Civil works update comprising rough order of magnitude estimates of materials’ volumes and heavy equipment required for work completion,*
3. *Material transportation plan (e.g., for batch plant, cement/sand/aggregate delivery) which provides for a possible coordinated movement with the military of certain materials to the site.*
4. *Cost estimate for Subcomponents 2 and 3 below, including schedules and a Gantt chart for all aspects of Kajaki Unit 2 installation.*
5. *Summary of industry tests utilized and the results of these tests, photographic record of the inventory with labels enabling items to be referenced against the equipment list, and plan view of laydown yard detailing container location or item location.*

An Excel spreadsheet formatted similarly to Attachment 11 will be submitted with each report. Remarks and detailed information will be submitted with an accompanying Word document.

Status: COMPLETE

Prepared Final Assessment Report, titled “Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report,” provided as Attachment d-04. This report described efforts undertaken, and presented the findings of the inventory and condition assessment of GFE at the Kajaki HPP for Unit 2 and electrical and control upgrades to Units 1 and 3. In the process of performing the scope of work applicable to Component 6, KHPP determined additional upgrades to Units 1 and 3 which could significantly improve the reliability and generating capacity of Kajaki HPP. Although beyond the scope of required assessment, these improvements were a logical “fall-out” of work within scope.

The Assessment Report included an item-by-item analysis and assessment of each GFE item, described civil work to install Unit 2 and perform repairs to the Kajaki Powerhouse, a material transportation plan for materials required for construction and life support at

the Kajaki HPP during construction, cost estimates and proposed schedule for Subcomponents 6.2 and 6.3, test results, and maps of GFE location upon completion of the assessment task.

3.3 Subcontracts and Major Procurements

There were no major subcontracts executed as part of this contract subcomponent.

3.4 Budget and Expenditures

Per the Contract, the estimated cost and fixed fee values are established at the Component 6 level. The final costs of this subcomponent may vary; however, the sum of the final costs of all Component 6 subcomponents is limited to the total value of Component 6. A summary of the Subcomponent 6.1 estimated cost (revised as of Contract Modification 13) and costs billed through 25 July 2014 (as reflected in Invoice 105), is provided in Table 5 below:

Table 6: Subcomponent 6.1 – Financial Summary

| Cost Report | Estimated Cost (Modification 13) | Costs Billed thru 25 July 2014 | Remaining Budget |
|-----------------------------------|----------------------------------|--------------------------------|------------------|
| TOTAL COST (Including Fee) | ██████████ | ██████████ | ██████████ |

3.5 Government Property Summary

KHPP received GFE in the form of Kajaki Camp structures and facilities and furnishings. The disposition of the non-Unit 2 GFE is addressed in **Appendices g-06** and **g-07**. No GFE was procured for this Subcomponent. All GFE transferred to KHPP as part of the Unit 2 Turbine Installation is discussed as part of the Assessment Report. Any replacement GFE was procured under Subcomponent 6.2, and will be described in that report.

3.6 Final Schedule

The challenges related to project execution and schedule slippage is detailed above under Section 3.2 Execution of Work. The final project schedule is provided as **Attachment a-08**.

4 PROJECT PHYSICAL COMPLETION

4.1 Documentation of Completion

The initial final draft of the Unit 2 GFE Assessment Report was presented to USAID on 31 January 2012. However, when the installation of the Unit 2 turbine was descopeed from the KHPP project activities, it was necessary to perform another equipment inventory to verify both the condition and location of all Unit 2 GFE. This joint inventory

was conducted between BVSPC personnel and USAID/IRD EQUALS representatives at the Kajaki site during Autumn of 2013. The official turnover of the Unit 2 GFE to the new DABS implementing Contractor, GFA, LTD, took place at a special conference in Dubai, UAE from 05 to 10 December 2013. BVSPC revised the 31 January 2012 final draft of the Assessment Report as a result of information requested and exchanged during this meeting. This revised report was issued on 06 February 2014.

USAID issued the Certificate of Substantial Completion for this contract subcomponent on 14 January 2014. USAID issued the Final Completion and Acceptance Certificate on 17 February 2014.

4.2 Photo Album

A photo album is included with the Assessment Report, and is presented as Attachment d-04.

5 SUSTAINABILITY

The activities under this project only involved the assessment of existing equipment at the site. Therefore, no sustainability considerations are applicable to the activities related to KHPP Subcomponent 6.1.

6 SECURITY PLAN AND INCIDENT REPORTS

BVSPC operated under a project-wide **Security Plan** in addition to a security plan specifically for the Kajaki Dam Camp site (**Attachment a-02**). One major security incident was reported at the site during the last week of the execution of this contract Subcomponent. A copy of the Incident Report is provided in **Attachment a-02**.

7 SAFETY PROGRAMS/PLANS

BVSPC operated under a program-wide **Health and Safety Plan and Procedures (Attachment a-04)** managed by the BVSPC Health and Safety Manager. No safety incidents were reported throughout the duration of the implementation of Subcomponent 6.1. KHPP was required to perform multiple heavy lifts during the implementation of Subcomponent 6.1. Job hazard analyses of the lifts were performed prior to all heavy lifts. In addition, during the implementation of Subcomponent 6.1, it became necessary to ensure the aged crane utilized was repaired and certified by international standards per BVSPC – USAID’s Prime Contract safety requirements.

8 QUALITY CONTROL (QC) PROGRAM/PLAN

BVSPC operated under a project-wide **Quality Control (QC) Plan (Attachment a-05)**. The implementation of a QC program at Kajaki was the responsibility of the KHPP professionals and Subcontractors engaged in the GFE assessment work. Qualified KHPP professionals provided oversight and guidance.

The assessment program included a significant recordkeeping program in addition to QC of onsite construction. This recordkeeping program included daily recordkeeping for all found and assessed inventory.

9 ENVIRONMENTAL CONTROL

The assessment of Unit 2 GFE required significant movement of equipment and materials and the testing of oils stored or contained within various pieces of equipment. All reasonable environmental protective measures were taken. The Environmental Mitigation and Management Plan (EMMP) for all Kajaki work was implemented with overall site and site activity environmental issues addressed. Environmental reporting and compliance documentation are included in **Attachments a-14** through **a-17**.

10 STATEMENT OF PATENTS, ROYALTIES OR CLASSIFIED MATERIALS

There were no patents, royalties, or classified materials obtained or generated during the execution of this contract Subcomponent.

11 VALUE ENGINEERING CHANGES (IF APPLICABLE)

The objectives and tasks of Subcomponent 6.1 did not lend themselves to the application of value engineering.

12 ENHANCING BEST PRACTICES – LESSONS LEARNED

Table 6 outlines thoughts for considerations to enhance best practices which result from lessons learned in the implementation of Component 6, Subcomponent 1:

Table 7: Subcomponent 6.1 – Considerations from Implementation

| Observation | Lesson | Recommendation |
|---|---|--|
| Lack of GFE documentation (e.g., design drawings, packing lists, installation instructions, O&M manuals). | Lack of documentation made it very difficult to understand exactly what was shipped and should be onsite (especially detailed quantities). | Obtain complete equipment documentation before starting inventory and condition assessment. |
| Difficulty arranging for adequate lifting equipment required to access GFE stored in shipping containers. | Original lifting equipment available onsite required repair. Lack of lifting equipment and time required to repair it limited the ability of initial Unit 2 material assessment team to complete, and necessitated a second site visit to complete inventory and condition assessment. This situation was noted in BVSPC's initial Inspection Plan and acknowledged by USAID in its approval. | Do not perform inventory and condition assessment until adequate lifting equipment to provide access is available. |

13 WARRANTY

The activities under this project involved only the assessment of existing equipment at the site. Therefore, no warranty is applicable to the activities related to KHPP Subcomponent 6.1.

14 OUTSTANDING ISSUES

There are no outstanding issues related to the complete close of the Subcomponent.

15 CONCLUSION: IMPACT ASSESSMENT

This Closeout Report is limited to activities associated with the execution of Component 6, Subcomponent 1. All other Components and Subcomponents, including the PMO, will have their own closeout report.

The Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report, as amended 05 February 2014, documented the inventory and condition assessment of the GFE as found by BVSPC at the Kajaki HPP. The Assessment Report findings and recommendations provided the basis for refining the scope and execution planning of Subcomponents 6.2 and 6.3.

16 DEVELOPMENT EXPERIENCE CLEARINGHOUSE (DEC)

The Final Kajaki Dam Unit 2 Hydro Inventory and Condition Assessment Report as amended 05 February 2014 and this closeout report will be submitted to the DEC as required.