

NEW 2ND BRIGADE BASE
KIRKUK, IRAQ

SIGIR PA-06-041
APRIL 20, 2006



SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION

April 20, 2006

MEMORANDUM FOR COMMANDING GENERAL, MULTI-NATIONAL FORCES -
IRAQ
COMMANDING GENERAL, GULF REGION DIVISION,
U.S. ARMY CORPS OF ENGINEERS
DIRECTOR, IRAQ RECONSTRUCTION MANAGEMENT
OFFICE

SUBJECT: Report on Project Assessment of the New 2nd Brigade Base, Kirkuk, Iraq
(Report Number SIGIR-PA-06-041)

We are providing this project assessment report for your information and use. We assessed the in-process construction work being performed at the New 2nd Brigade Base, Kirkuk, Iraq to determine its status. We made this assessment to provide you and other interested parties with real-time information on a relief and reconstruction project underway and in order to enable appropriate action to be taken, if warranted. The assessment team included an engineer and an auditor.

This report does not contain any negative findings. As a result, no recommendations for corrective action are made and management comments on this report are not required.

We appreciate the courtesies extended to our staff. This letter does not require a formal response. If you have any questions please contact Mr. Brian Flynn at (703) 343-9149 or brian.flynn@iraq.centcom.mil or Mr. Kevin O'Connor at (703) 343-9149 or Kevin.oconnor@iraq.centcom.mil.

A handwritten signature in black ink that reads "Stuart W. Bowen, Jr." followed by a period.

Stuart W. Bowen, Jr.
Inspector General

Special Inspector General for Iraq Reconstruction

SIGIR PA-06-041

April 20, 2006

New 2nd Brigade Base, Kirkuk, Iraq

Synopsis

Introduction. This project assessment was initiated as part of our continuing assessments of selected sector reconstruction activities. This project was an Air Force Center for Environmental Excellence contract to support the Multi-National Security and Transition Command - Iraq. The overall objectives were to determine whether selected reconstruction contractors were complying with the terms of their contracts or Task Orders and to evaluate the effectiveness of the monitoring and controls exercised by administrative quality assurance and contract officers. We conducted this project assessment in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included an engineer and an auditor.

Project Assessment Objectives. The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties in order to enable appropriate action, when warranted. Specifically, we determined whether:

1. Project results were consistent with original objectives;
2. Project components were adequately designed prior to construction or installation;
3. Construction or rehabilitation met the standards of the design;
4. The Contractor's Quality Control plan and the U.S. Government's Quality Assurance program were adequate; and
5. Project sustainability was addressed.

Conclusions. This assessment determined that:

1. The completed project was consistent with original Task Order objectives. Specifically, the 2nd Brigade Base facilities' objectives have been met. At the time of the assessment, the facilities were in use for the objectives intended.
2. This project consisted of almost entirely new construction. The contract and Task Order required submission and approval of design drawings and specifications for the new construction. Based on the review of contractor and Air Force Center for Environmental Excellence project files, the design was sufficient to complete this project to Iraqi standards.
3. The contract for the renovation and construction of the 2nd Brigade Base facilities required meeting International and U.S. standards. However, the contractor proposed and the Air Force Center for Environmental Excellence agreed to construction using local contractors, materials, and labor. Consequently, the renovation and construction met local Iraqi standards, not International and U.S. standards.
4. The Statements/Scopes of Work for Task Orders 0003 and 0016 required the contractor to prepare a site-specific Quality Program Plan for the review and approval of the Air Force Center for Environmental Excellence. The contractor

submitted a Construction Quality Control plan, which included a health and safety plan to the U.S. Government. The contractor did provide, to the U.S. Government, Quality Control daily reports, test results, and invoices, which provided adequate detail. The Government's Quality Assurance program was adequate due to the Quality Assurance Representative being on site during construction activities, monitoring field activities, and completing daily Quality Assurance reports. In addition, the Quality Assurance Representative's daily reports were sufficiently complete and included project specific information in the reports.

5. The contract adequately addressed sustainability and it appears this will result in an operational and sustainable Iraqi Army facility. The contract included the turnover of the operation and maintenance manuals, as-built drawings, local procurement of parts and equipment, technical training of personnel, a one-year warranty for all equipment and operations, and providing spare repair parts for one year. The contractor worked with the Iraqi Ministry of Housing and Construction for design and support of this project. A review of the 2nd Brigade facility appeared to show that it was operating in accordance with the Statement of Work's specific objective for a functional and sustainable facility.

Recommendations and Management Comments. This report does not contain any negative findings or recommendations for corrective action. Therefore, management comments were not required or provided.

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Introduction

Objective of the Project Assessment

The objective of this project assessment was to provide real-time relief and reconstruction project information to interested parties in order to enable appropriate action, when warranted. Specifically, we determined whether:

1. Project results were consistent with original objectives;
2. Project components were adequately designed prior to construction or installation;
3. Construction or rehabilitation met the standards of the design;
4. The Contractor's Quality Control (CQC) plan and the U.S. Government's Quality Assurance (QA) program were adequate; and
5. Sustainability was addressed.

Pre-Site Assessment Background

Contract, Task Order, and Costs

The new 2nd Brigade Base project was initially definitized to construct a brigade-size facility for the Iraqi Army. This was one of several projects performed under the Air Force Center for Environmental Excellence (AFCEE) Worldwide Environmental Restoration and Construction (WERC) contract number, FA8903-04-D-8672. This contract, issued 21 November 2003, was a small business indefinite quantity contract. The Air Force Materiel Command issued the contract to the Environmental Chemical Corporation (ECC).

Task Order (TO) 0003, issued 15 April 2004, was a cost plus fixed fee agreement with a total Not to Exceed (NTE) amount of \$47,500,528. The TO 0003 objective was to construct all the requirements for the new 2nd Brigade Military Base near Kirkuk, Iraq. The TO 0003 had seven Task Order modifications.

- Modification # 01, issued 28 July 2004, revised the Statement of Work (SOW) and extended the construction completion date to 12 September 2004. All other terms and conditions remain in full force and effect.
- Modification # 02, issued 8 October 2004, increased the ceiling amount by \$13,199,923, to \$60,700,451, extended the field performance period to 15 January 2005 and the period of performance to 15 March 2005, re-designated the project manager, and added email-invoicing instructions. All other terms and conditions remain in full force and effect.
- Modification #03, issued 19 November 2004, increased the ceiling amount by \$2,796,617, to \$63,497,068, replaced the existing SOW with the revised SOW, dated 21 September 2004, and added contractor acquired property. All other terms and conditions remain in full force and effect.
- Modification #04, issued 28 February 2005, increased the contract ceiling by \$7,808,333, to \$71,305,401, replaced the existing SOW with the revised SOW, dated 4 January 2005, extended field and contract performance period 15 May 2005, added contractor acquired property, and modified the invoice instructions. All other terms and conditions remain in full force and effect.
- Modification #05 issued 16 March 2005, extended the TO period of performance for field construction to 15 July 2005, extended the period of performance for TO

- completion to 31 August 2005, and changed the contractor acquired property. All other terms and conditions remain in full force and effect.
- Modification #06, issued 31 August 2005, changed contractor acquired property and provided new invoice instructions. All other terms and conditions remain in full force and effect.
 - Modification #07, issued 15 November 2005, extended the period of performance for field construction to 30 December 2005. All other terms and conditions remain in full force and effect.

Construction of the New 2nd Brigade Military Base project began under Phase I of TO 0003 and completed under Phase II. Phase II construction was performed under TO 0016, issued 29 October 2004, a cost plus fixed fee agreement under the same contract, with a NTE amount of \$38,241,721. The TO 0016 had five TO modifications.

- Modification # 01, issued 12 April 2005, changed the Statement of Work (SOW), increased the ceiling amount by \$597,862, to \$38,839,583, and extended the period of performance to 31 July 2005.
- Modification # 02, issued 30 July 2005, increased the period of performance to complete the field construction to 30 August 2005 and the TO to 30 September 2005.
- Modification # 03, issued 12 August 2005, revised the SOW, increased the ceiling amount by \$63,367, to \$38,902,950, and changed the invoice instructions.
- Modification # 04, issued 7 September 2005, increased the ceiling amount by \$5,754,442, to \$44,657,392, revised the SOW, and changed the period of performance to complete the field construction to 31 October 2005 and the TO completion date to 31 December 2005.
- Modification # 05, issued 19 October 2005, extended the field performance date to 30 November 2005.

Project Objective

The contract's objective, through TOs 0003 and 0016, was to renovate, replace, and construct facilities and provide infrastructure repair at the Kirkuk Army Base, with the intent of providing facilities to support, house, and train the new Iraqi 2nd Brigade. The AFCEE personnel stated that additional goals of the contract were to maximize the use of existing infrastructure and to use local materials, construction methods, and labor.

Description of the Facility (preconstruction)

The description of the facility (preconstruction) was based on information obtained from the contractor, AFCEE personnel, and the AFCEE project file. The Kirkuk area Military Base is located within the Tameem Governorate area, approximately 240 kilometers north of Baghdad, Iraq. The project site was approximately ten acres in size and triangular in shape. The site was a former helicopter base, generally level with an existing runway. Utilities for the new site were to be located and connected in coordination with the city of Kirkuk. Since local electricity is not reliable at this time, generators were required to provide primary and backup electricity. The Dibis water treatment plant, renovated under TO 0003, provided water for consumption, life support, and fire suppression, in addition to benefiting the local community. The base water system distributed the water.



**Site Photo 1. Preconstruction location of future 2nd Brigade Base
(Photo courtesy of ECC)**

Scope of Work of the Contract

Modification 04 to TO 0003 contained a revised SOW entitled, “Statement of Work for MOD 4 New Brigade,” dated 4 January 2005. To build the Iraqi Army Base near Kirkuk, Iraq, this SOW separated the project into the following major tasks:

- Civil site work
- Facility work
- Special construction

Current Project Design and Specifications

The new military base project started with TO 0003 and finished with TO 0016. A conceptual work plan was developed and modified as needed through the contract.

The TO 0003 Modification 4 SOW, dated 4 January 2005, required the following civil site work, facility work, and special construction:

Civil Site Work:

- Clear and remove debris and rubble
- Design and construct three small arms ranges
- Design and construct a parade ground and stands
- Design and construct a road network
- Design and construct a perimeter security fence
- Design and construct a storm water management system
- Design and construct a sewer distribution system
- Design and construct a water supply and distribution system
- Design and construct a primary electrical power distribution system
- Design and construct a motor pool and street lighting system

Facility Work:

- Construct enlisted barracks
- Construct company HQ facilities
- Construct NCO barracks
- Construct brigade annex
- Construct officers barracks
- Construct transient barracks
- Construct battalion headquarters
- Construct brigade headquarters
- Construct auditorium/classroom/lecture hall
- Construct dining facility
- Construct fire station
- Construct jail facility
- Construct clinic
- Construct multiuse facility
- Construct mosque
- Construct maintenance facility
- Construct maintenance shop
- Construct warehouse
- Construct POL stations
- Construct motor pool
- Construct HQ facility
- Construct signal facility
- Construct engineer buildings
- Construct military police facility

Special Construction:

- Construct a packaged water treatment plant
- Construct a packaged wastewater treatment plant
- Construct a primary electrical power generation plant
- Construct a ammunition storage facility

Appendix B of the Task Order's original SOW described the following approximate building dimensions.

<i>BUILDING LIST</i>				
DESCRIPTION OF BUILDINGS	NO. BLDG	Approx. Dimensions	FLOORS	AREA, SM
ENLISTED BARRACKS	15	54 x 14	2	22,680
COMPANY HEADQUARTERS	28	14 x 14	1	5,488
NCO BARRACKS	2	54 x 14	2	3,024
BRIGADE ANNEX	1	54 x 14	2	1,512
OFFICER BARRACKS	2	54 x 14	2	3,024
TRANSIENT BARRACKS	3	54 x 14	2	4,536
BATTALION HEADQUARTERS	3	50 x 17	1	2,550
BRIGADE HEADQUARTERS	1	41 x 27	1	1,107
AUDITORIUM/CLASSROOM BLDG	1	51 x 30	1	1,530
DINING FACILITIES	3	24 x 30	1	2,160

FIRE STATION	1	24 x 9	1	216
JAIL HOUSE	1	24 x 9	1	216
CLINIC	1	6 x 31	1	186
SHOPPETTE	1	11 x 25	1	275
THEATER	1	19 x 26	1	494
BANK/MAILROOM/BARBERSHOP	1	25 x 9	1	225
MOSQUE	1	45 x 32	1	1,440
MAINTENANCE FACILITIES (6 BAY)	4	17 x 30	1	2,040
MAINTENANCE SHOPS	3	12 x 17	1	612
WAREHOUSE	7	12 x 15	1	1,260
POL	4	6 x 8	1	192
GENERATOR BLDG	1	As Required	1	
TRANSFORMER BUILDINGS		As Required	1	
ATHLETIC FIELDS	4	110 x 75	1	33,000
PARADE GROUNDS W/REVIEWING STAND	1	70 x 70	1	4,900
FIRING RANGES	1	630 x 630	1	396,900
RANGE CONTROL BUILDING	3	4 x 4	1	48
GUARD TOWERS	3	4 x 4	1	48
SUPPLY BUILDINGS	3	2.5 x 2.5	1	18
BRIEFING SHELTERS	3	15 x 9	1	405
AMMO SHELTERS	3	1.5 x 1.5	1	7
HEADQUARTERS/HEADQUARTERS COMPANY	1	19 x 34	1	646
SIGNAL BUILDING	1	19 x 34	1	646
ENGINEER	1	19 x 34	1	646
MILITARY POLICE	1	19 x 34	1	646
PERIMETER WALL	1	As Required		0
PERIMETER FENCE	1	As Required		0
NEW PAVED ROADS		3,300 LM		0
SIDEWALKS				
PACKAGE WASTEWATER TREATMENT	1			
PACKAGE WATER TREATMENT PLANT	1			
PRIMARY ELECTRICAL POWER GENERATION PLANT	1			

The Statement of Requirements and Specifications (SORS) stated that the Army base would consist of approximately 3,000 occupants, requiring 380 liters of water per person per day for sanitary sewer system and wastewater purposes. The SORS required the contractor provide a comprehensive sanitary sewer system for the Kirkuk Military Base with a requirement rate of 200 liters per person per day. The SORS required the

contractor provide a self-contained, Package Water Treatment Plant, with the capability to handle 180 liters per person per day.

The SORS contained the following requirements for concrete:

- 28 day compressive strength of 28 MegaPascals or greater
- Minimum reinforcement of 15 centimeters (cm) x 15 cm 12 gauge wire mesh
- Free from excessive voids or cracks when poured and whetted sufficiently to avoid stress cracking due to excessive moisture loss
- Soil beneath compacted to 100% maximum density determined by the Standard Proctor Method, ASTM D 698, before pouring concrete
- Expansion or control joints placed in concrete such that the maximum slab size is approximately 3 meters (m) x 3 m

The SORS required the contractor to construct all buildings, maintenance facilities, pump houses, security outposts, generator and transformer rooms, dining facilities, and firehouses located on the installation in accordance with the International Building Code and all other applicable international codes. In addition, the SORS stated that all new buildings must be constructed with a life expectancy of 50 years and capable of withstanding the equivalent of a 100-year storm with minimal damage.

The TO 0003 revised SOW, dated 4 January 2005, required a work plan, which included a property survey, a plan of all site civil work and utilities, and an architectural, structural, mechanical, plumbing, electrical, life safety, and communications plan. In addition, it required the submittal and approval of the following:

- Plan and construction submittals
- Equipment, fixture, finishing, and hardware submittals
- Schedules and progress meetings
- Quality Control plan
- Commissioning plan
- Safety plan
- Security plan

The basic contract's SOW required the contractor identify and comply with, including all changes and amendments in effect on the date of issuance of each TO, the following:

- All applicable federal, state, and local statutes
- Air Force/Military/Host Nation instructions, manuals, handbooks, regulations, guidance, and policy letters
- Executive Orders (EOs)
- American Petroleum Institute Codes
- National Association of Corrosions Engineers
- National Fire Protection
- Steel Structures and Painting Counsel
- National Electrical Code
- Uniform Fire Code
- International Building Code (IBC)

The TO 0003 revised SOW, dated 4 January 2005, required the contractor to identify and comply with, including all changes and amendments in effect on the date of issuance of this TO, the following:

- All applicable Iraqi federal, state, and local statutes
- CPA and Air Force/Army/Iraqi instructions, manuals, handbooks, regulations, guidance, and policy letters
- EOs
- IBC

The contractor was required to use the following U.S. standards as guidance:

- National Association of Corrosions Engineers
- National Fire Protection
- Steel Structures and Painting Counsel
- National Electrical Code
- Uniform Fire Code

Further, as a minimal acceptable standard, the contractor was required to comply with The Interim Safety and Occupational Health Work Practices for USAF (AFCEE WERC) Contractor Projects in Iraq.

It was the contractor's responsibility to identify and comply with all applicable requirements

A combination of paper copies and digital copies accessed through the ECC website portal were available for review. The assessment team reviewed the design submittals required to construct the project. Contractor design drawings included architectural, structural, electrical, and plumbing designs. In addition, the ECC submitted the manufacturer's data sheet, work plans, and design calculations. The ECC prepared design submittals for the aircraft hangar and barracks, and documented the transmittal to AFCEE utilizing Eng Form 4025-R "Letter of transmittal of shop drawings, equipment data material samples, or manufacture's certificated of compliance." The AFCEE reviewed and approved the submittals "as is" or with comment and documented approval on the submittal Eng Form 4025-R.

Based on a review of the design approval process and design submittals, the design appears to be complete and adequate to complete the objectives of this project.

Reported Project Work Completed

We determined the project's status prior to the site visit through discussions with the AFCEE and ECC personnel, as well as a review of the contract. The Project and Contracting Office (PCO) database, dated 10 December 2005, identified this project as 23160. The database listed this project with a value of \$38,839,583, approximately 94% complete and with a completion date of 13 January 2006. AFCEE personnel stated there is an outstanding Period of Performance extension for TO 0016 until 31 March 2006. The AFCEE personnel stated that the total value of the entire Kirkuk Military Base, which included the 2nd Brigade, was approximately \$114,000,000.

Site Assessment

On 11 February 2006, we performed a prioritized on-site assessment of the new 2nd Brigade Base project near Kirkuk, Iraq. The base contained over 150 structures so we focused the assessment on several representative buildings, buildings constructed first or last and the most critical components of the base, such as the utilities. The assessment covered work completed and work in progress. No work was pending except for warranty work.

Assessment of work completed included the following:

- Demolition and debris removal
- Storm water management system
- Waste water treatment facility
- Asphalt roads, parking areas and sidewalks
- Perimeter security
- Ammunition supply point
- Firing ranges
- Electrical generation and distribution systems
- Maintenance facility
- Enlisted and officers quarters
- Dining facilities
- Headquarters facility
- Jail facility
- Gasoline station
- Mosque
- Bakery

Assessment of work in progress included the following:

- Power generation

Work Completed

Demolition and debris removal

At the time of the assessment, the earthwork appeared complete. The SORS required the contractor clear and remove all debris within 500 meters of any building site and 100 meters of any road. This work appeared to be complete and in compliance with the contract.

Storm water management system

The storm water management system included grading, excavation, and filling all uneven ground surfaces to provide a uniform sloping surface to a minimum of 300 meters from any facility. Fill material was required to be compacted to 90% of maximum density determined by the Standard Proctor Method, ASTM D 698. In addition to our site visit, we reviewed the contractor's construction site photographs and determined that the grading and excavation appeared to meet the contractual requirements. The two weeks prior to our site assessment the Kirkuk area received an unusually heavy amount of rain, which provided an opportunity to perform a visual evaluation of proper drainage. The area appeared to be well graded with no significant flooded or erosion areas.

The storm water management system and sewer system design and installation was complete at the time of the assessment. Since these systems were underground, we did

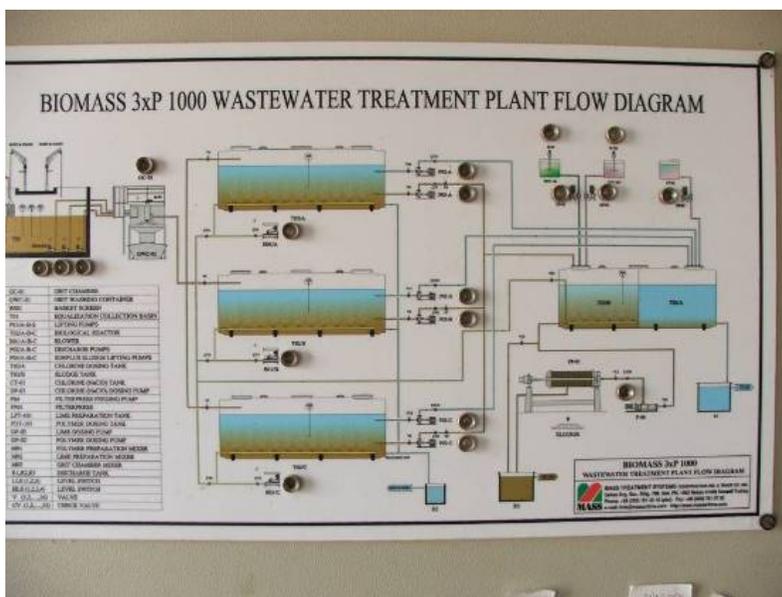
not examine them during the assessment; however, what appeared to be storm water drainage system manhole covers were apparent and drainage did not appear to be a problem even with the wet weather that occurred prior to the assessment. Photos reviewed from the construction and installation of these systems appeared adequate to meet the specifications of the contract.

Waste water treatment facility

At the time of the assessment, the selection and fabrication of the wastewater treatment system was complete and the system was in-use (Site Photo 2). The treatment system used physical, biological, and chemical processes to purify the water before discharge. Site Photos 3 and 4 show the flow diagram and a filter press for the wastewater treatment plant, respectively. The wastewater treatment plant appeared to meet the contract requirements.



Site Photo 2. Waste water treatment plant



Site Photo 3. Flow diagram for waste water treatment plant



Site Photo 4. Filter press for waste water treatment plant

Asphalt roads, parking areas and sidewalks

The contract required the construction of asphalt roads, concrete sidewalks, parking areas, gravel pads, parade grounds, and soccer fields. A road network had been constructed and appeared to meet the intent of the design. Specifically, the contractor constructed a perimeter road and roads through the compound. We reviewed the contractor provided Quality Control (QC) photos and concluded the road construction methodologies appear to meet the contract's requirements. Site Photo 5 is a contractor file photo taken of the asphalt road under construction.

During the site visit, we observed a completed parade ground with reviewing stand and four soccer fields. Site Photo 6 shows the soccer field during construction, while Site Photo 7 shows a soccer field in use by Iraqi soldiers at the time of our assessment.

The asphalt roads, concrete sidewalks, parking areas, gravel pads, parade grounds, and soccer fields appeared to meet the contract requirements and were in-use.



Site Photo 5. Asphalt road under construction (Photo courtesy of ECC)



**Site Photo 6. Soccer field under construction
(Photo courtesy of ECC)**



Site Photo 7. Iraqi soldiers using soccer field

Perimeter security

The contract required the construction of a perimeter security fence. The design specifications required a lighted fence around the perimeter of the base with a concrete wall, berms or a trench, and observation posts. We observed a perimeter fence, trench, and observation posts manned with armed guards, as shown in Site Photos 8 and 9, respectively. Concrete walls, berms, and trenches were installed to prevent vehicles from easily driving through the fence. The fence, vehicle obstacles, and manned guard observation post observed during the assessment appeared to meet the design specifications and be practical and functional.



Site Photo 8. View of fence and trench from observation post



Site Photo 9. Observation Post

Ammunition supply point

At the time of the assessment, the design and renovation work for the ammunition supply point (ASP) was complete (Site Photo 10). The SORS originally required the new construction of an ASP facility, with the size of the facility 40 meters by 60 meters and 4 meters tall. A subsequent contract modification cancelled the construction of a new ASP facility and required the renovation of an existing building to meet ammunition storage requirements. We were told that the ASP was in use for the intended purpose.



Site Photo 10. Ammunition supply point

Firing ranges

At the time of the site assessment, the design and construction of three small arms ranges was complete. A TO modification required the use of a baffle system designed to minimize ordnance from being fired over the firing range backstop. We observed the small arms ranges constructed with baffles so that projectiles could not go over the backstop berms. Site Photo 11 shows one of the small arms ranges and baffle system. The lower section of the picture is the target area and berm with Iraqi workers installing green sandbags on the concrete baffle.



Site Photo 11. Small arms range baffle under construction (Photo courtesy of ECC)

Electrical generation and distribution systems

At the time of the assessment, design work was complete for the electrical power distribution system. Since local power was not reliable, the Task Order required backup

power. A group of eight self-contained 1 MW diesel generators were installed and in-use for their intended purpose of providing electrical power to the base (Site Photo 12).

Underground utilities appeared adequately installed and were functional. The contract required the burying of the utility lines. After reviewing the contractor's construction site photographs and performing our own visual inspection, the lines appeared to meet the contractual requirements.



Site Photo 12. Eight 1MW electrical generators

The power distribution system consisted of power transmission lines, including high and low voltage cable, switchgear, transformers (Site Photo 13), concrete pads, security fencing, covered central fueling station with a containment system (Site Photo 14), cooling system, generator building, and generator office. The central fuel supply requirements were to provide double walled tanks with two supply fittings, a concrete pad with a spill retention wall, grounding, and shading. The 24-hour fuel supply appeared to meet the requirements of the contract and was in-use at the time of the assessment.



Photo 13. Electrical transformers and switchgears



Photo 14. Central fuel supply

Maintenance facility

The SORS required the construction of four separate 6-bay maintenance facilities and three maintenance shops with the approximate sizes of 17 meters x 30 meters and 12 meters x 17 meters, respectively. At the time of the assessment, design and construction work was complete on the motor pool. The motor pool appeared fully stocked with equipment and was in-use for the intended purpose during the assessment (Site Photos 15 and 16). The motor pool appeared to meet the contract requirements.



Site Photo 15. Six bay maintenance facility in use



Site Photo 16. Maintenance shop bay

Enlisted and officers' quarters

The SORS required the construction of 19 two-story buildings for enlisted, non-commission officer (NCO), and officer barracks, each building with the approximate size of 54 meters x 14 meters.

Construction of the enlisted and officer/NCO barracks was complete. The barracks construction was completed and turned over to the Iraqi Army in phases. The assessment team walked through two enlisted and an officer/NCO barracks that were currently in-use. In order to determine construction quality, we assessed one of the first and last living quarters constructed and turned over to the Iraqi Army.

The barracks appeared to meet the requirements of the contract. We observed lighting, fans, electrical outlets, laminated glass windows, fire alarm and air conditioning systems, which appeared to be functional and meet contract requirements. Site Photos 17 and 18 show the outside of the barracks and a bunkroom in the enlisted barracks.



Site Photo 17. Exterior view of enlisted barracks



Site Photo 18. Sleeping quarters of enlisted barracks

Dining facilities

The SORS required the construction of three dining facilities, each in the approximate size of 24 meters x 30 meters and capable of seating 256 soldiers at a time. At the time of the assessment, the design and construction of the dining facilities were complete (Site Photo 19). Site Photos 20 and 21 show the dining facility in-use for lunch and during cleanup, respectively. From the brief site visit and from viewing the photos taken during construction, the dining facilities appear to have met the contract specifications. Due to the customs and preference of the Iraqi cooks, the contractor provided gas burners for the

dining facilities, as shown in Site Photo 22. The dining facilities were in use for their intended purpose during the site assessment.



Site Photo 19. Outside of dining facility building



Site Photo 20. Dining facility in use



Site Photo 21. Dining facility food line



Site Photo 22. Propane stove in dining facility

Headquarters facility

At the time of the assessment, the headquarters building design and construction were complete. The single story headquarters building was behind the concrete walls, as shown in Site Photo 23. Due to the time limitation on site, we did not assess the headquarters building during this visit.



Photo 23. Headquarters building

Jail facility

During the assessment, we visually observed the outside of the jail facility (Site Photo 24). The design and the construction of the jail were complete. The jail was in-use at the time of the assessment and therefore the assessment team did not have the opportunity to examine the inside or outside of the facility close-up. Instead, the assessment team reviewed the contractor's during and after construction photographs to determine whether the jail met the intent of the contract's requirements. It appears the jail did meet the specifications of the design.



Site Photo 24. Jail facility

Gasoline station

At the time of the assessment, the design and construction of the gasoline station were complete (Site Photo 25). The design was changed to consolidate all gasoline stations into this one station for better management and control. The station appeared to be level with good drainage of the concrete pad. The facility had a small office, four covered

gasoline pumps, and two underground tanks. The gasoline station appeared to meet the specifications of the design and to be well constructed.



Site Photo 25. Gasoline station

Mosque

At the time of the assessment, the mosque design and construction were complete and the mosque was in-use (Site Photo 26). The SORS required the mosque comply with local customs. In keeping with local Iraqi tradition of not entering the mosque with dirty feet, the contractor provided a separate restroom next to the mosque, which allowed the Iraqi Army soldiers the opportunity to wash their feet prior to entering the mosque (Site Photo 27). It appears the mosque did meet the specifications of the design.



Site Photo 26. Front view of mosque



Site Photo 27. Restroom next to the mosque

Bakery

In order to provide the Iraqi Army soldiers with fresh bread, a bakery was designed and constructed. The contractor furnished the bakery with industrial sized equipment, such as a mixer (Site Photo 28) and oven (Site Photo 29).



Site Photo 28. Mixer used in bakery



Site Photo 29. Oven in bakery

Work in Progress

Work was pending on the installation and commissioning of the second bank of generators for the primary power distribution system. The two remaining primary power generators were government furnished equipment that was surplus from another site outside of Iraq. Each of the diesel generators was rated to produce 2.5 MW of electricity. The generators had been installed on a new concrete pad with a new generator building constructed around them. The contractor was in the process of connecting and commissioning the generators. Synchronization and load sharing of the power generation system was required to complete the contract. Site Photo 30 shows one of the generators inside the new generator building. We observed the installation of supporting equipment for the power generation system, such as the fuel supply and the cooling system (Site Photo 31), which appeared to meet the contract requirements.

We observed warranty items, such as cracks in the exterior stucco walls (Site Photo 32), which need repair.



Site Photo 30. 2.5 MW Electrical generator provided as government furnished equipment



Site Photo 31. Generator building cooling system



Site Photo 32. Crack in exterior stucco wall

Project Quality Management

Contractor Quality Control Program

The basic contract SOW, dated 26 June 2003, required the contractor to prepare for AFCEE review and approval, a site-specific Quality Program Plan (QPP) for each TO. The contractor provided the AFCEE and the U.S. Army Corps of Engineers (USACE) its Construction Quality Control (QC) Plan on 10 May 2004. This QC Plan consisted of plans, procedures, and organization necessary to produce an end product that complied with contractual requirements. The QC Plan included the qualifications of the QC personnel and procedures for tracking deficiencies from identification through corrective action.

We reviewed the contractor's QC daily reports via its website. The QC daily reports contained sufficiently detailed information, including the number of Iraqi workers, the activities performed, and any testing done. However, there was no QC deficiency-tracking log.

During construction, as many as four concrete batch plants were on site mixing concrete (Site Photo 33). The use of the concrete batch plants, an on-site laboratory, and field QC testing (Site Photo 34) all appear to have contributed to more consistent concrete quality.



Site Photo 33. One of the remaining on-site concrete batch plants



Site Photo 34. Field QC testing during construction (Photo courtesy of ECC)

Government Quality Assurance Program

USACE Engineering Regulation (ER) 1110-1-12 and PCO Standard Operating Procedures (SOP) CN-100 specify requirements for a Government QA program. The Government QA program, administered through the USACE and the AFCEE, was adequate.

Construction oversight was provided by the USACE initially during Phase I under TO 0003 and then by an AFCEE Title II contractor, Versar, for Phase II under TO 0016. The USACE provided QA oversight from May 2004 until May 2005; while the AFCEE Title II contractor, Versar, provided QA oversight from March 2005 until the end of the project.

The USACE and Versar Quality Assurance Representatives (QARs) were on site during construction events. The USACE and Versar QARs monitored field activities and completed daily QA reports, which were forwarded to the USACE Kirkuk Area Office and the AFCEE, respectively, for review. The QAR reports were sufficiently complete, accurate, timely, and incorporated digital photographs of the sites. Neither the USACE QAR nor the Versar QAR maintained a QA deficiency log; however, the Versar QAR did maintain QA reports that included digital photographs of any deficiencies noted at the site.

Project Sustainability

The contract adequately addressed sustainability, and it appears this will result in a sustainable new military base. The contract included the turnover of the operation and maintenance manuals, as-built drawings, local procurement of parts and equipment, technical training of personnel, a one-year warranty for all equipment and operations, and providing spare repair parts for one year. The contractor worked with the Iraqi Ministry of Housing and Construction for design and support. Use of local materials, labor, and construction techniques should enhance sustainability.

Conclusions

Based upon the results of our site visit, we reached the following conclusions for assessment objectives 1, 2, 3, 4, and 5. Appendix A provides details pertaining to Scope and Methodology.

1. Determine whether project results were consistent with original objectives.

The completed project was consistent with original Task Order objectives. Specifically, the 2nd Brigade Base facilities objectives have been met. At the time of the assessment, the facilities were in-use for the objectives intended.

2. Determine whether project components were adequately designed prior to construction or installation.

This project consisted of almost entirely new construction. The contract and Task Order required submission and approval of design drawings and specifications for the new construction. Based on the review of contractor and AFCEE project files, the design was sufficient to complete this project to Iraqi standards.

3. Determine whether construction or rehabilitation met the standards of the design.

The contract for the renovation and construction of the 2nd Brigade Base facilities required meeting International and U.S. standards. However, the contractor proposed and the AFCEE agreed to construction using local contractors, materials, and labor. Consequently, the renovation and construction met local Iraqi standards, not International and U.S. standards.

4. Determine whether the Contractor's Quality Control plan and the Government Quality Assurance program were adequate.

The SOW for TOs 0003 and 0016 required the contractor to prepare, for the AFCEE review and approval, a site-specific QPP. The contractor submitted a construction QC Plan, which included a health and safety plan to the U.S. Government. The contractor did provide QC daily reports, test results, and invoices, which provided adequate detail to the U.S. Government. The Government's QA program was adequate due to the QARs being on site during construction activities, monitoring field activities, and completing QA daily reports. In addition, the QARs' daily reports were sufficiently complete, and included project specific information in the reports.

5. Determine if project sustainability and operational effectiveness were addressed.

The contract adequately addressed sustainability, and it appears this will result in an operational and sustainable Iraqi Army facility. The contract included the turnover of the operation and maintenance manuals, as-built drawings, local procurement of parts and equipment, technical training of personnel, a one-year warranty for all equipment and operations, and providing spare repair parts for one year. The contractor worked with the Iraqi Ministry of Housing and Construction for design and support. A review of the aviation and operations facility appeared to show that it was operating in accordance with the Scope of Work's specific objective for a functional facility.

Recommendations and Management Comments

This report does not contain any negative findings or recommendations for corrective action. Therefore, management comments were not required or provided.

Appendix A. Scope and Methodology

We performed this project assessment from January through April 2006, in accordance with the Quality Standards for Inspections issued by the President's Council on Integrity and Efficiency. The assessment team included an engineer and an auditor.

In performing this Project Assessment we:

- Reviewed contract documentation to include the following: Contract, Contract Modifications, and Statement of Work;
- Reviewed the design package (drawings and specifications), Quality Assurance Plan, Quality Control Plan, Contractor's daily Quality Control Reports, and Quality Assurance Reports;
- Interviewed the Air Force Center for Environmental Excellence (AFCEE) personnel, AFCEE local national quality assurance personnel, and Environmental Chemical Corporation personnel; and
- Conducted an on-site assessment and documented results at the Kirkuk Military Base, located in Kirkuk, Iraq.

Appendix B. Acronyms

AFCEE	Air Force Center for Environmental Excellence
ASP	Ammunition Supply Point
CQC	Contractor Quality Control
ECC	Environmental Chemical Corporation
EO	Executive Order
ER	Engineering Regulation
IBC	International Building Code
m	Meter
NCO	Non-Commissioned Officer
NTE	Not to Exceed
PCO	Project and Contracting Office
QA	Quality Assurance
QAR	Quality Assurance Representative
QC	Quality Control
QPP	Quality Program Plan
SOP	Standard Operating Procedure
SORS	Statement of Requirements and Specifications
SOW	Statement of Work
TO	Task Order
USACE	United States Army Corps of Engineers
WERC	Worldwide Environmental Restoration and Construction

Appendix C. Report Distribution

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U.S. Ambassador to Iraq

Director, Iraq Reconstruction Management Office

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Inspector General, Department of State

Department of Defense

Secretary of Defense

Deputy Secretary of Defense

Director, Defense Reconstruction Support Office

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Director, Defense Contract Audit Agency

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Principal Deputy to the Assistant Secretary of the Army for Acquisition,
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Subcommittee on National Security, Emerging Threats and International Relations

House Committee on International Relations

Subcommittee on Middle East and Central Asia

Appendix D. Project Assessment Team Members

The Office of the Assistant Inspector General for Inspections, Office of the Special Inspector General for Iraq Reconstruction, prepared this report. The principal staff members who contributed to the report were:

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