



SIGAR

Office of the Special Inspector General
for Afghanistan Reconstruction

July 31, 2014

Lieutenant General Thomas P. Bostick
Commanding General and Chief of Engineers
U.S. Army Corps of Engineers

Dear General Bostick:

I am writing to alert you to an urgent safety concern regarding the fuel farms located at the power plants that provide electricity to Camp Shaheen. I am concerned that the bulk fuel storage tanks supporting the power plants were not properly constructed to allow for removal of water and particulate matter. If water and contaminants build up in these fuel tanks, the power plants they support could mechanically fail.

A recent Combined Security Transition Command-Afghanistan (CSTC-A) site visit to the fuel farm at Camp Shaheen revealed that the bulk storage tanks lack internal or external sloping that would allow contaminants to collect at a single low point in the tanks. This deficiency appears to deviate from the U.S. Army Corps of Engineers' (USACE) project drawings and contract specifications for the construction of the fuel tanks. The contract also requires construction of a "water draw off valve at the tank low point" that would allow for easy and frequent draining of water and particulate matter as it settles to the bottom.¹ However, the tanks at Camp Shaheen were constructed with flat bottoms and internal "ribs," which cannot be cleaned frequently and create internal pockets of water and particulate matter. Given the tanks' current construction, these contaminants are removable only via the semiannual cleaning required by the operations and maintenance contract.

Additionally, a CSTC-A memorandum detailing the results of the site visit also states that not all tank piping is adequately sized to allow for removal of foreign matter. The buildup of water in a fuel tank promotes the growth of microbes that can form colonies that float on the surface of the fuel. According to the CSTC-A memorandum, bacteria and fungus use this combination of water and fuel to grow and multiply, creating a thick film in the tanks. The memorandum further states that if the power generators that draw on the fuel tanks pull this foreign matter into the fuel line, the generators will come to a stop. The memorandum points out that the filtration system in place will not prevent this from happening because the film created by the fungus will coat the filtration system and cause a pressure differential that is "extremely threatening to the generator."² Generator failure will jeopardize the flow of electricity to Camp Shaheen disrupting operations there.

While I understand that the generators themselves are equipped with oil/water separators, these components are likely to wear out faster and require more frequent replacement as a result of the tank design. This situation is especially concerning, given the fact that the operation and maintenance contract for the fuel tanks calls for removal of water and debris only at six month intervals. At this rate, the site visit memorandum states that "the likelihood of generator failure due

¹ W5J9JE-13-C-0002 Afghan National Army 209th Corps Shaheen Fuel Farm Expansion (October 2012) § 01015-5.2.1(c).

² Memorandum of Lt. Richard Dowling (May 24, 2014).

to contamination at some point in the future approaches 100%.”³ Contamination of 230,000 liters of fuel has already caused failures at the power plant at Camp Thunder in Gardez, and I am concerned that Camp Shaheen may suffer similar problems if USACE does not change its maintenance practices.

In order to ensure the safety of the personnel at Camp Shaheen, I request written responses to the following questions:

1. Why were the diesel fuel tanks supporting power plants one and two at Camp Shaheen constructed in a manner other than that described in the contract specifications? Specifically, why do the tanks have flat bottoms and internal ribs, instead of internal or external slopes leading to a single low point?
2. Why is some of the piping in the tanks not sized properly to allow for the removal of foreign matter?
3. Will the scheduled transition of maintenance responsibilities to the Afghan National Army alter the frequency with which the tanks are cleaned?
4. What other measures, if any, is USACE taking to ensure the proper maintenance and operation of the fuel tanks at Camp Shaheen? Please include a description of any actions taken to remove excess water and particulate matter beyond those that take place during the semi-annual cleaning process.
5. What contingency plans are in place if either power plant at Camp Shaheen fails?

Please respond in writing to this request by August 14, 2014. Thank you in advance for your cooperation. These requests are made pursuant to the Inspector General Act of 1978, as amended, and section 1229 of the National Defense Authorization Act for Fiscal Year 2008, as amended.

Should you have any questions or need additional information, please have your staff contact Jack Mitchell, Director of Special Projects at [REDACTED] or [REDACTED].

Sincerely,



John F. Sopko
Special Inspector General
For Afghanistan Reconstruction

³ Id.



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
TRANSATLANTIC DIVISION
P.O. BOX 2250
WINCHESTER, VA 22604-1450

August 12, 2014

Mr. John F. Sopko
Special Inspector General for Afghanistan Reconstruction
1550 Crystal Drive, 9th floor
Arlington, VA 22202

Dear Mr. Sopko:

We are responding to your letter to the Commanding General and Chief of Engineers, Lieutenant General Thomas Bostick, dated July 31, 2014, regarding your safety concerns at the fuel farms located at the power plants that provide electricity to Camp Shaheen. Your letter included five questions for the Corps of Engineers. The Transatlantic Afghanistan District (TAA) performed a review of circumstances surrounding the construction of the fuel tanks at Camp Shaheen, in regards to your questions, and provided the results to Transatlantic Division (TAD). Combined Security Transition Command – Afghanistan (CSTC-A) also provided input to TAD to assist with answers to your questions (Enclosure 1). Following are our responses to your questions:

a. Why were the diesel fuel tanks supporting power plants one and two at Camp Shaheen constructed in a manner other than that described in the contract specifications? Specifically, why do the tanks have flat bottoms and internal ribs, instead of internal or external slopes leading to a single low point?

Based on the short suspense for this reply, we are unable to substantiate that fuel farm 1 was constructed in a manner other than the contract specifications. The fuel storage tanks for Camp Shaheen Power Plant 1, referred to as fuel farm 1, were constructed several years ago. We are not aware of any identified design, construction or maintenance issues. There is currently a restriction for travel to Camp Shaheen for Coalition Personnel. When lifted, we will assess the as-built conditions. We are conducting a records search with our Reachback Districts to obtain the contract documents for further design analysis. Again, we will assess at the first opportunity.

The fuel storage tank project for Camp Shaheen Power Plant 2, referred to as fuel farm 2, is currently under construction. The construction of the tanks has been completed and the tank and piping installation is ongoing at this time. The tanks were shop fabricated in Pakistan and the tank shells meet the construction standards in the contract specifications with the following exceptions:

- The fabricator constructed the tanks with internal ribs, and
- Drain valves are 2" in lieu of 1 "

The as-built drawings of the tanks have been reviewed and analyzed by the United States Army Corps of Engineers, Petroleum, Oils and Lubricants Center of Expertise (CoE) (Enclosure 2 without attachments). Holes were drilled in the bottom of each rib, to facilitate tank drainage. Field verification was performed to ensure all tanks are level and use a 2" drain valve at the bottom of each tank. The CoE has determined the asbuilt condition of these tanks will pose no change in the operation and maintenance of the tanks.

The National Operations and Maintenance (O&M) Contractor, ITT Exelis, performed maintenance on the Camp Shaheen power plants from November 2010 thru 31 July 2014. Their O&M procedures included: daily inspections of the power plant's fuel system, to include the fuel tanks, with findings recorded on a daily inspection checklist; testing all fuel deliveries for water and sediments; dismantling all fuel transfer pump fuel/water separators every six months for cleaning or replacing, if required; daily checks of the fuel/water separators mounted on the engines, with separators replaced if they did not function properly. For the period that the Camp Shaheen power plants were on the National O&M contract, the fuel tanks did not require cleaning.

b. Why is some of the piping in the tanks not sized properly to allow for the removal foreign matter?

The fabricator provided a 2" valve in lieu of a 1" valve. This drain valve is located at the bottom of each tank. During a site visit on May 17, 2014, Combined Security Transition Command -Afghanistan representatives concurred with the use of the 2" drain valve and agreed this provided easier draining of water and other contaminants.

c. Will the scheduled transition of maintenance responsibilities to the Afghan National Army alter the frequency with which the tanks are cleaned?

No. The scheduled frequency will not change. The transition plan includes continuing with the current Operations and Maintenance (O&M) plan which provides a schedule for the cleaning of the tanks. There is no plan to alter the frequency of tank cleaning.

d. What other measures, if any, is USACE taking to ensure the proper maintenance and operation of the fuel tanks at Camp Shaheen? Please include a description of any actions taken to remove excess water and particulate matter beyond those that take place during the semi-annual cleaning process.

USACE does not believe additional measures are necessary to ensure proper operational and maintenance of fuel tanks. The ANA intends to hire many of the Afghan national O&M staff currently employed under the USACE managed O&M contract. This will provide increased continuity and knowledge transfer.

e. What contingency plans are in place if either power plant at Camp Shaheen fails?

The risk of failure of the power plants at Camp Shaheen has been mitigated through the design process. There is a low probability of complete power plant failure since each plant

contains six (6) independent generators, providing redundancy. The loss of any one generator will not impact the ability of the power plant to provide sufficient power for user load. In the event of total failure of the power plant, the ANA can coordinate for spot generation at critical locations.

Should you have any questions or need additional information, please have your staff contact Mr. Mike Hatchett, Internal Review Auditor, at [REDACTED] telephone: [REDACTED].

Sincerely,

A handwritten signature in black ink, appearing to read "R. J. Heitkamp", with a long, sweeping underline that extends to the right.

Richard J. E. Heitkamp
Colonel, U.S. Army
Deputy Commander

Enclosures



HEADQUARTERS
COMBINED SECURITY TRANSITION COMMAND – AFGHANISTAN
KABUL, AFGHANISTAN
APO, AE 09356

CSTC-A CJ-ENG

7 AUG 2014

MEMORANDUM FOR COMMANDER, TRANS-ATLANTIC DIVISION -- TRANS-ATLANTIC
AFGHANISTAN DISTRICT, US ARMY CORPS OF ENGINEERS

SUBJECT: CSTC-A Response to SIGAR 14-86-SP "Construction of Fuel Tanks at
Camp Shaheen", dated July 31, 2014.

1. The purpose of this memorandum is to provide input to the United States Corps of Engineers (USACE) for their response to SIGAR's request for information contained in the SIGAR 14-86-SP letter of inquiry concerning construction of fuel tanks at Camp Shaheen.
2. On 17 May 2014, representatives from CSTC-A conducted a site visit to the Camp Shaheen power plants along with representatives from ISAF Joint Command (IJC), USACE, Regional Command-North, ITT Exelis, and the Inspector General/Transparency, Accountability, and Oversight (IG/TAO) Shafafiyat. During this site visit, the CSTC-A and IJC representatives assessed that the diesel fuel tanks supporting the Camp Shaheen power plants did not allow for removal of free water and particulate matter, and that the diesel fuel tanks did not contain the required sloping to allow particulate matter to collect at a single low point equipped with a sump to pump the particulate matter out of the tank. Furthermore, the CSTC-A and IJC representatives asserted that the tank piping was the wrong size to allow for the removal of particulate matter, and the internal ribbing in the tanks created pockets for the foreign matter to collect. The CSTC-A and IJC representatives asked the USACE representatives present to ascertain whether USACE constructed the fuel tanks to standard in accordance with the approved design.
3. Following the 17 May 2014 site visit, the USACE District Office in Bagram consulted with the USACE Petroleum, Oils and Lubricants (POL) Center of Expertise about the fuel tanks. The USACE POL Center of Expertise assessed that the fuel tanks for the Camp Shaheen power plants were sufficient and did not require any changes. This information was provided to the IJC, USACE, RC-N, ITT Exelis and Shafafiyat representatives from the 17 May 2014 site visit, and no representative raised any further issue regarding the Camp Shaheen power plants to our knowledge.
4. The National Operations and Maintenance (O&M) Contractor, ITT Exelis, performed maintenance on the Camp Shaheen power plants from November 2010 thru 31 July 2014. Their O&M procedures included: daily inspections of the power plant's fuel system, to include the fuel tanks, with findings recorded on a daily inspection checklist; testing all fuel deliveries for water and sediments; dismantling all fuel transfer pump fuel/water separators every six months for cleaning or replacing, if required; daily

checks of the fuel/water separators mounted on the engines, with separators replaced if they did not function properly. For the period that the Camp Shaheen power plants were on the National O&M contract, the fuel tanks did not require cleaning.

5. On 31 July 2014, the Camp Shaheen power plants transitioned off the National O&M contract to an ANA controlled O&M contract. Coverage between ITT Exelis and the new contractor overlapped for a period of approximately six weeks. Additionally, ITT Exelis and the contractor conducted a thorough site walk together to ensure continuity, and ITT Exelis communicated the critical information about each system to the new contractor. Finally, the new contractor hired all but one of the employees that worked for ITT Exelis at the Camp Shaheen power plants.

6. To ensure that the ANA funded contractor is performing necessary maintenance at the Camp Shaheen power plants, CSTC-A Engineers will ensure the Afghan National Army Facility Engineers are properly funded, trained and equipped to independently conduct the O&M service through our Infrastructure Training Advisory Team. Additionally, USACE Local National Quality Assurance Representatives (LNQARs) will continue to monitor the power plant performance with on-site visits to ensure proper maintenance.

7. Point of contact for this action is LTC Joel R. Quinn at DSN [REDACTED], or via e-mail at [REDACTED]



FREDERIC A. DRUMMOND JR.
COL, EN
Director

REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

CENWO-PM-S

21 July 2014

MEMORANDUM FOR CETAA Program Manager, Bagram Area Office, ATTN: Schelby

SUBJECT: USACE Fueling Systems (POL-TCX) Review Comments on Camp Shaheen Fuel Farm Expansion at Camp Shaheen, Balky Province, Afghanistan.

1. This memorandum summarizes the USACE Fueling Systems (POL-TCX) technical review comments on the Shaheen Fuel Farm Expansion at Camp Shaheen, Balky Province, Afghanistan. These comments are based upon the information provided in the attached references.
2. The following standards and criteria were used as a reference when performing the review:
 - a. UFGS 33 56 10 Factory-Fabricated Fuel Storage Tanks
 - b. UFGS 09 97 13.17
 - c. UFGS 09 97 13.27
 - d. UFGS 09 97 02
 - e. UL 142
 - f. UFC 3-460-01
 - g. NFPA 30
 - h. NFPA 30(a)
3. POL-TCX comments:
 - a. Were tanks designed to code?
 - a. POL-TCX response: All DOD factory fabricated fuel tanks are required to be in accordance with UFGS 33 56 10 Factory-Fabricated Fuel Storage Tanks. Single wall tanks must conform to NFPA 30, NFPA 30a, and UL 142. The 94,000 L (25,000 gallon) tanks in this project do not appear to bear the UL label, therefore it would not be approved stateside. Do they offer a UL equivalency? From what we can tell, it looks like the tank does meet ASME which is a huge step in the right direction. Tank shell thickness appears to meet or exceed UL 142 requirements.

- b. Are tanks were fabricated to spec?
 - a. POL-TCX response: One page (Page 11) of the specification (01015) has been received.
 - i. 5.2.1.c. “25mm lockable freeze-proof water draw off valve at the tank low point”
 - 1. Drawings and photos do not clearly indicate if the drain is at the tank low point. It is unusual for the low point to be in the center of the tank. Typically the low point is on one end and the tank is set on a housekeeping pad which is sloped 1%
 - ii. 5.2.1.c “Tanks shall be provided with...platform/stair.”
 - 1. Drawings indicate a stair up to a catwalk, but do not show a platform running the length of the tank. Personnel must routinely access tank top to stick the tank, take samples, work on valves, etc. The platform is required to conform to OSHA for fall protection which typically means a platform running the length of the tank with handrails on all four sides.
 - iii. 5.2.1.c “Tanks shall be provided...other fittings and appurtenances required for full and safe operation.”
 - 1. There are two vents and two emergency vents provided on each tank, which wouldn't be unusual on a double wall tank (one for the primary and one for the secondary tank), but is strange on a single wall tank. The redundancy does not hurt anything, but is not necessary.
 - iv. 5. tank gauging connection required by UFC 3-460-01, but could be nozzle N11 shown on drawing M3. Typically the ATG and the alarms are one in the same.
 - b. UFC 3-460-01 requires a remote tank level readout 60 inches (1500 mm) above the walking surface near the tank per Table 8-1.o.
 - c. Structurally the tanks appear to be properly supported on the tank saddles. These tank saddles need to be anchored to the concrete pad foundation.
- c. Identify what modifications/remedies are required to bring the tanks into compliance.
 - a. Remedies are more or less self explanatory/embedded with the deficiencies noted.

- d. Install independent valves on waste piping to isolate other tanks when draining water from one tank.
 - a. POL-TCX response: Do not understand this deficiency of concern. When looking at drawing M-10, the drains on each tank is a short pipe with elbow and shut off valve. Each tank is has an independent valve and is isolated from all the other tanks.
- e. Internal baffles (ribs) that the contractor had to perforate by drilling holes in order to allow water to flow (are the holes too small?).
 - a. POL-TCX response: While not ideal, the holes will work.
- f. The tank design and as-builts show a 1% slope to center, but when the tanks arrived on-site the field team measured the internal slope and found that it did not have a 1% slope to center (it was flat).
 - a. POL-TCX response: Tanks should be sloped to allow water in tank bottoms to properly drain. Moisture is a concern on two areas: contamination of the fuel, and tank corrosion.

4. Relevant references and communications are attached.

5. It is recommended that Army Petroleum Center (Jim Hugar, [REDACTED]; [REDACTED]) be engaged on this and any future petroleum-related reviews in order to ensure comprehensive support.

Original Signed

GREGORY M. ETTER
Technical Coordinator / Program Manager
Fueling Systems (POL-TCX) Center of Expertise
U. S. Army Corps of Engineers

CF: (Electronic)

U.S. Army Petroleum Center, ATTN: James Hugar, 8725 John J. Kingman Rd. Stop 6241, Fort Belvoir, VA 22060-6241

Attachments