

# Power Surge

## 249th Engineer Battalion Conducts Electrical Inspections and Repairs

*By Lieutenant Colonel Paul B. Olsen*

**D**uring the summer of 2008, national news outlets were not covering the civil engineering successes being achieved by the United States Army Corps of Engineers (USACE) and units of the Engineer Regiment throughout Iraq, but rather a troubling electrical engineering situation emerging within the base camps housing U.S. forces. Since the beginning of Operation Iraqi Freedom, 16 U.S. personnel had been fatally electrocuted in Iraq, including 10 Soldiers, 5 Marines, and a Defense Department contractor.

In response to these tragic fatalities, Multinational Force–Iraq (MNF–I) stood up and now leads Task Force Safe Actions for Fire and Electricity (TF SAFE) to mitigate the risk of accidental electrocution of deployed personnel. Today, TF SAFE is proving to be a unique partnership between MNF–I, the Defense Contract Management Agency (DCMA), and USACE. This partnership highlights the technical skills of its first responders, the noncommissioned officers (NCOs) of the 249th Engineer Battalion (Prime Power).

### Scoping the Problem

**T**he electrical problems in Iraq are enormous in their number and complexity. Engineers and planners for TF SAFE, USACE, and the 249th Engineer Battalion (known as the “Black Lions”) continue to tackle this theaterwide problem, which includes hundreds of contingency operating locations, thousands of buildings, and tens of thousands of temporary facilities. All of these facilities require electrical safety inspections. To immediately establish a safety mindset among Soldiers in-theater, the commander of TF SAFE initiated a theaterwide awareness program to halt the use of unauthorized electrical equipment usage such as daisy-chained power strips and illegal hot plates. Additionally, TF SAFE purchased tens of thousands of certified pieces of equipment, such as fuse-protected power strips and outlet adaptors, to exchange at no cost with Soldiers for noncertified equipment previously available for purchase in-theater.

Senior leaders understood that electrical hazard awareness and equipment exchange programs can only do so much. They felt that the root cause for the accidental shocks and electrocutions could be traced to the improper electrical wiring of temporary U.S. facilities. Recent statistics support their conclusion, indicating that the majority of reported electrical shocks occurred while Soldiers conducted daily tasks in container express (CONEX) units, containerized housing units (CHUs), and ablution (AB) or hygiene units.

Electrical shocks in facilities are avoidable. In certain cases in-theater, improperly wired CONEX, CHU, and AB units—combined with equipment failures—resulted in electrocutions. This could have been avoided in certain cases through the emplacement of proper electrical bonding and grounding systems. The proper electrical wiring of CONEX, CHU, and AB units mitigates the risk of future accidental electrocutions. A safely wired facility is considered “bonded and grounded” with the presence of a wiring system that permanently joins all metallic parts within a facility or unit and provides a safe path for electrical current to travel back to its source, or to the ground. Before bonding and grounding inspections and repairs could commence, a theaterwide electric code was needed to determine the inspection and repair standards, and that code would be the National Electric Code (NEC). With this standard in place, TF SAFE and USACE leaders focused training on NEC bonding and grounding compliance to inspect, report, and repair the wiring problems.

### Providing Technical Competence

**T**he 249th is a versatile power generation battalion assigned to USACE to provide commercial-level power to military units and federal relief organizations during full spectrum operations. When ordered to deploy to TF SAFE, the battalion and its eight active platoons were experiencing an extremely high operations tempo. The equivalent of one platoon was supporting Operation Enduring Freedom,

including an emergency power plant installation. Two platoons were already deployed to support Operation Iraqi Freedom, with two more platoons replacing them. The equivalent of one platoon was preparing to deploy on a separate overseas mission and other missions all over the world. With Hurricanes Gustav, Hanna, and Ike brewing, one platoon was being held in reserve in case it was needed stateside. The battalion had one remaining platoon available for duty with TF SAFE.

The deployment of this platoon signaled the initial USACE support response to TF SAFE. On 6 September 2008, the platoon of 14 NCOs from Alpha Company, 249th Engineer Battalion, traveled from Schofield Barracks, Hawaii, to Winchester, Virginia, to attend a week-long deployment preparation course, as well as initial bonding and grounding instruction. The platoon arrived in Kuwait by 14 September to certify on theater-required Warrior Tasks and reported to TF SAFE in Baghdad on 19 September, one day ahead of schedule. Two senior NCOs from Bravo Company, 249th Engineer Battalion, augmented TF SAFE to form its operations cell.

Electricians from across USACE followed the 249th Engineer Battalion Soldiers. Under a refined deployment plan, all inspectors first travel to the USACE Deployment Center at Winchester, Virginia. There they get uniforms, equipment, and refresher training on bonding and grounding before deploying to Victory Base. The USACE plan is to send approximately 125 electricians and 37 fire protection personnel to TF SAFE by December 2008.

### Providing Organizational Competence

While the platoon from Alpha Company and the initial USACE electricians were deploying, TF SAFE wasted no time in its preparations to begin NEC compliance inspections. Although the inbound inspectors were current with the bonding and grounding requirements of the NEC, additional theater-specific training was required. A second one-week training course under the instruction of a master electrician/certified inspector and a DCMA electrical engineer prepared the inspectors for what they would soon see in-theater. On 25 September 2008, TF SAFE graduated its first class of 14 inspectors from the 249th Engineer Battalion. These 14 Black Lions were divided into two groups to better address the two categories of TF SAFE inspections. Ten Soldiers would respond to the facilities under the Logistics Civil Augmentation Program (LOGCAP) contract to ensure contractor compliance with the NEC, and four would respond to facilities not under LOGCAP contract to oversee the repair of noncompliant electrical systems. The command and control task was overseen by the 249th Engineer Battalion's liaison officer and two NCOs.

Using a 21-point inspection checklist, the 249th Engineer Battalion NCOs inspected a large group of CHUs on Victory Base. They found that the majority of the units were not properly bonded because they were missing a bonding jumper wire common to most NEC-compliant distribution panels. Although

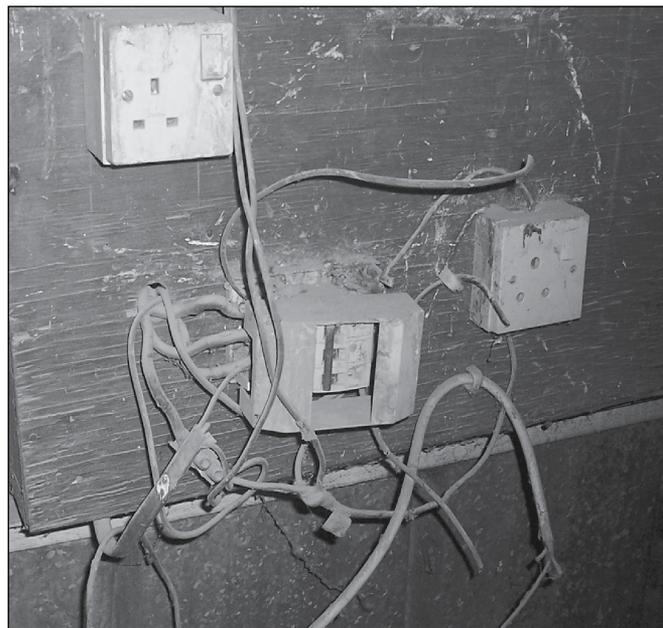


Photo by Lieutenant Colonel Paul B. Olsen

### Haphazard wiring at a former Iraqi army facility

this fault only requires a 10-minute fix, it may be a common problem throughout the thousands of CHUs in-theater.

Early inspection results from contingency operating locations (non-LOGCAP facilities) suggested a more serious problem. Some electrical work at these small, strategic bases was not in compliance with the NEC, or with any code for that matter. In defense of the commanders of the area of operations, the noncompliant electrical work was often the result of a successful counterinsurgency tactic: to support emerging Iraqi micro-economies, the Commander's Emergency Reconstruction Program allows local contractors to do electrical work. In the case of all inspections, when severe faults (those that pose a dire threat to life) are identified, the 249th Engineer Battalion NCOs and USACE electricians immediately repair them. Lower risk faults are prioritized and repaired by contracted electricians or, in the case of area of operation commanders, directed to be repaired by qualified military electricians.

### Conclusion

Although TF SAFE cannot reverse the tragic electrocutions of 16 U.S. personnel, its work highlights the ability of USACE and DCMA to successfully cooperate to counter the significant theaterwide challenge posed by accidental electrocutions. Soldiers in the grade of specialist and sergeant interested in joining the 249th Engineer Battalion should contact Command Sergeant Major Clint Pearson at [clinton.pearson@us.army.mil](mailto:clinton.pearson@us.army.mil).



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