



Protecting Critical Power and Electrical Infrastructure during Contingency Operations:

Risk Management vs. Risk Mitigation

A White Paper by

Rodney Cruce, Director of Project Development,
Inglett & Stubbs International (ISI), Ltd.

Brent Harrison, Project Manager,
Inglett & Stubbs International (ISI), Ltd.



Copyright © 2012 ISI, Ltd

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of the copyright owners.

This white paper is an informational document, and is not a product of the U.S. Government. The reader should note that this document has not been approved through the formal Inglett & Stubbs International (ISI) Standards Process, and does not represent the formal consensus of ISI's Architecture Forum.

The owner grants a non-exclusive license to the U.S. Army Corps of Engineers (USACE) to publish this document in full on the World Wide Web (prime sites and mirrors), and in printed form. Any other usage is prohibited without the express written permission of the owner.

Published by Inglett & Stubbs International, September 2012

Comments relating to the material contained in this document may be submitted to Rodney Cruce or Brent Harrison at the following address:

c/o Inglett & Stubbs International
5500 S. Cobb Drive, Suite E
Smyrna, GA 30080

or by email to: rcruce@isiprime.com or bharrison@isiprime.com



Contents

Executive Summary.3

Understanding the Problem4

 Background 4

 Root Cause 5

 Contributing Factors (Sub-Causes) 6

 The Effect 9

 The Consequence 10

 Problem Summary 10

Solving the Problem11

 Concept 11

Conclusion.14

References15

This page intentionally
left blank.



Executive Summary

U.S. personnel conducted military operations in Iraq for more than five years before being attacked in 2008 by an unexpected adversary lurking in the shadows. This unassuming enemy exposed vulnerability and inflicted sabotage by using the existing power and electrical infrastructure as an unwitting accomplice, resulting in the deaths of 19 U.S. personnel. Host nation contractors, third country contractors, and defense contractors on the LOGCAP contract became facilitators, and drastically affected the success of contingency operations. They compromised the enforcement of the Uniform Facilities Code (UFC), which contains “the minimum requirements” for OCONUS construction, the National Fire Protection Act (NFPA) 70, the National Electric Safety Code (NESC), the National Electric Code (NEC), and the American Standards Institute (ANSI) C2. Lack of awareness and understanding of the risks associated with electrical hazards, missing requirements in the LOGCAP contract, and lack of technical experts to effectively enforce the standards created a serious problem.

The simple tasks of making coffee, operating a computer, or taking a shower became potentially fatal. Psychological effects on personnel and negative effects on operations required mitigation efforts to ensure personnel were safe and missions were accomplished. Initial efforts to correct the problem using the LOGCAP contract were unsuccessful, which drove the decision to establish a theater-wide program called TF SAFE, to establish electrical standards in Iraq using qualified and certified U.S. Journeyman electricians. TF SAFE established three lines of operations:

- 1 Plans, Policies and Procedures – to set operational conditions
- 2 Facilities – to mitigate electrical safety hazards
- 3 Awareness – directed at addressing human factors

TF SAFE was formed to improve situational awareness of coalition forces, and extend awareness to reception/staging and pre-deployment training. The issue in Iraq warranted involvement from Congress, and raised the question: “Does Afghanistan have the same problem?” After a Special Inspector General for Afghanistan Reconstruction (SIGAR) inspection, it was determined that Afghanistan did have the same issues and justified a similar program, and TF POWER was established in Afghanistan to execute mitigation efforts there as well.



This white paper addresses key issues contributing to the problem and the establishment of a specialized utility MATOC contracting vehicle, to ensure that work on critical power and electrical infrastructure is performed by qualified and certified professionals. The focus of this white paper is to help others understand the problem, cause, effect, and consequence, as well as the necessary elements of a utility MATOC to prevent further deaths and the necessity for Congressional involvement. Military commanders, contracting officers, and contracting officer representatives involved in overseas contingency operations should reference the previous problems in Iraq and Afghanistan for justification. Major commands must establish an Authorized Electrical Wiring Policy similar to CJTF's Policy #5 mandating the use of qualified and certified electricians. Establishing a utility MATOC has proven results, and assisted the above-mentioned personnel in protecting critical infrastructure while mitigating risk to force and risk to mission.

Simple tasks such as making coffee, operating a computer, or taking a shower became potentially fatal.

Using unqualified and noncertified resources for critical electrical infrastructures put our U.S. and Coalition forces in grave danger.

Understanding the Problem

PROBLEM STATEMENT

The use of unqualified and non-certified personnel performing electrical work and the lack of enforced electrical standards (**cause**) compromised both U.S. and Coalition forces' safety and health at U.S. installations overseas (**effect**), resulting in the loss of life to 19 U.S. personnel in 2008, and U.S. Congressional involvement (**consequence**).

Background

The tragic deaths of the 19 U.S. personnel in Iraq in 2008 created costly second and third order effects, due to several contributing factors that could have been prevented by hiring a qualified and certified workforce for this critical infrastructure. This section assists readers in understanding the problem, how it surfaced, and what consequences threatened the risk to force and the risk to mission. In order to understand the problem completely, one must analyze the problem statement and recognize that the problem:

- >> encompasses a **root cause**, to include underlying contributions
- >> creates an **effect**, and
- >> causes multiple **consequences**



Many times, the root cause is hidden or not apparent. The DoD Inspector General has assisted with understanding the problem by conducting investigations in both Iraq and Afghanistan: “Review of Electrocution Deaths in Iraq” and “Assessment of Electrical Safety in Afghanistan”. Both of these reports are referenced at the end of this document.

Root Cause

Unqualified and Non-certified Electricians

Beginning in 2003, electrical work on the existing host nation structures and newly constructed structures was performed by unqualified and non-certified personnel. The use of host nation buildings – newly constructed semi-permanent and permanent structures that were improperly grounded - did not meet U.S. electrical standards, which threatened the life, health and safety of personnel. Because these installations and the extension of the electrical infrastructure in Iraq were not constructed to U.S. electrical codes, the probability of injury was increased – but this was not readily apparent to U.S. and Coalition forces. Contracting officers were unaware of the many technical requirements of overseas contingency and enduring operations, which resulted in the need to rely on defense contractors to identify the issues (vulnerability).

This became a single point of failure. NONE of the in-theater general contractors possessed the required knowledge, experience, or qualifications to identify these hazards and protect U.S. personnel. Iraqi contractors did not understand the critical importance of electrical safety and U.S. electrical standards, resulting in electrical work that was not properly installed and grounded. This issue carried forward with the use of third country contractors, which were in Iraq to capitalize on the U.S. contracting dollars. These contractors used poorly implemented European wiring methods, which created even more problems. The U.S. defense contractors, performing operations and maintenance (O&M) under the LOGCAP contract, used varying methods, but none were to U.S. standards due to the use of Third Country Nationals (TCN) without the proper qualifications and certifications.

None of the in-theater general contractors possessed the required knowledge, experience or qualifications to protect U.S. personnel.

Reported incidents of electrical shock were treated as “daily life” in a third world country.



Contributing Factors (Sub-Causes)

End-User Lack of Awareness

A lack of knowledge of the risks and unfamiliarity with procedures to correct deficiencies resulted accidents being considered minor — something soldiers simply had to live with.

The U.S. Military's mission in Iraq was to defeat other military forces. It was not apparent at the onset that the Military would have an inherent mission for facility maintenance, which involved direct oversight in the development of construction and management requirements, including the direct oversight of defense contractors performing their duties. Although each installation established a mayor's cell responsible for managing and reporting the installation deficiencies, some were not aware of the significant risk that electrical hazards presented. Most of the facility maintenance programs lacked proper reporting, which failed to inform commanders of the potential threat posed by these electrical hazards.

This threat became obvious after the Office of the Inspector General (OIG) conducted an investigation. It was discovered that numerous U.S. personnel had reported incidents of electrical shock to the mayor's cells. The lack of knowledge and experience at mayor's cells resulted in these incidents being considered minor – something the soldiers simply had to live with. Mayor's cells treated these incidents as routine repairs and issued a work order to correct the deficiency, assuring everyone that everything was all right. (Office of Inspector General (OIG) Report # IE-2009-006, 2009)

This occurred because there was a lack of knowledge of risks associated with an overseas electrical infrastructure, and their unfamiliarity of the procedures required to correct those deficiencies. In fact, a qualified electrician would have seen these incidents of electrical shock as an indicator of a major flaw in the integrity of the electrical system.

Most of the soldiers were under the assumption that it was someone else's responsibility to look out for their best interests in regard to electrical issues – namely, the defense contractor. This attitude can be attributed to the fact that in the U.S., there is a dedicated process to ensure adherence to U.S. electrical standards and safety requirements, including dedicated power companies, certified electrical contractors, and a state electrical inspection process. Why would this be any different at a U.S. base overseas?



Contracting Difficulties for Contingency / Enduring Operations

Military contracting officers go through an extensive amount of training to ensure they are prepared to solicit and award contracts. Furthermore, the amount of time it takes for them to become qualified and gain experience is quite lengthy. They are trained to follow stringent legal regulations and a rigid contracting system. Contracting for contingency and enduring operations complicates their job even more, and the variable of operating in a war zone and working in a second or third world country increases the difficulty exponentially. These factors certainly contributed to the shortcomings in Iraq and Afghanistan. In 2008, the compounding of these factors led Congress to establish the Commission on Wartime Contracting in Iraq and Afghanistan, as a response to increasing indications of waste, fraud, and abuse in the Government contracting system.

A contracting office's workload is overwhelming at times, and results in contracting officers being overworked. In addition, many contracting offices are understaffed due to the amount of time it takes for individuals to become qualified, as well as the large number of contracts needed to conduct operations effectively. Therefore, they have to rely on the Defense Contracting Management Agency (DCMA) to assist with enforcing standards. However, DCMA does not have enough technical experts onsite to ensure electrical standards are enforced on each contract. Due to this vulnerability, government contracts are written with specific clauses from the Federal Acquisition Regulations (FAR) intended to mitigate this deficiency and to place the risk on the shoulders of the defense contractor. This is how the LOGCAP contract failed the U.S. Government, and allowed the use of unqualified and non-certified personnel for electrical construction and O&M projects.

The LOGCAP contract lacked the specific language and enforcement to ensure that the defense contractors' electrical O&M activities were up to U.S standards. The requirements were too broad, and general contractors (GCs) took advantage of this situation and did not provide the qualified and certified personnel required to ensure the work was completed per the standards. (OIG Report # IE-2009-006, 2009) Once discovered and the contract language corrected, GCs had the opportunity to correct the issues, but they still could not meet the standards due to a lack of qualifications, knowledge, and expertise.

The LOGCAP contract failed the U.S. Government by allowing the use of unqualified, non-certified personnel for electrical construction and O&M projects.

When contractors cannot complete electrical construction and O&M work safely due to lack of rigorous training and regulations, the results are devastating.



Rigorous requirements in the U.S. mitigate risk and prevent accidents.

Host nation and third country contractors used for electrical construction on U.S. bases followed no such regulations.

This outcome confirms the need for a defense contractor with specialized talents, knowledge, and experience. Further, it may be surmised from the above situation that the bundling of specialized services for critical infrastructure, such as electrical work, into a general construction or services contract does not guarantee a true evaluation of a contractor's capability to meet the necessary requirements.

General Contractors (GCs) are not Technical Experts

The use of defense contractors to augment our forces overseas is a must! The U.S. Military forces are a valuable commodity, and have been stretched thin by conducting wars on two fronts. The Government relies on defense contractors to perform work in accordance with a Performance Work Statement (PWS) or Statement of Work (SOW). The majority of the time, the military customer is responsible for creating these documents, but they may not have access to the technical experts for review of these documents before submission to the contracting office. However, the responsibility falls on the end user to ensure they have effectively communicated the requirements.

This is especially true when writing a Statement of Work (SOW) for power and electrical work. Once the contracting office receives the requirements, they solicit bids and then award the contract based on which contractor presented the best solution, by either value or price. Once the contract has been awarded, there is a significant amount of trust from the contracting office that the defense contractor will perform the work to the contract specifications and standards.

Performing electrical work to U.S. standards requires the contractor to have in-depth knowledge and experience in this specialized field in order to ensure the work is installed and maintained properly and does not pose a risk to U.S. personnel or the mission. Due to several of the shortcomings mentioned in the previous section, and the fact that there was a push to use host nation contractors, the electrical work was not installed properly (to U.S. standards), resulting in 19 U.S. personnel deaths.

In the U.S., a certified journeyman electrician undergoes a rigorous training program, both in the classroom and on job sites, working under the supervision of a qualified journeyman or master electrician for approximately five years before becoming licensed. During this process, a journeyman gains valuable experience, and learns that it is his profession's duty to correctly install and maintain electrical systems and notify superiors of any potential hazards. This is similar to the training a Contracting Officer receives, in the respect that it is a specialized skill requiring time to learn correct



methods to successfully perform the job, within a required regulation or standard. To gain further perspective, a U.S. journeyman or master electrician is only allowed to supervise up to three apprentice (unqualified) electricians at a time, due to the critical nature of the work and the consequences if not performed correctly. The amount of time and strict regulations required to obtain the necessary experience and knowledge of a journeyman may seem excessive, but one must realize that these journeymen are working to create and maintain critical infrastructure that, if neglected, can kill people.

By contrast, host nation and third country contractors employed by GCs had no such requirements and were oblivious to U.S. code standards. In most cases, they lacked a national electrical code for their own country, and did not have the knowledge to identify electrical hazards. U.S. defense contractors under the LOGCAP contract performing O&M on the power and electrical infrastructure in Iraq and Afghanistan were unable to identify these electrical hazards because they were using Third Country Nationals (TCN) to perform electrical work, since it was cheaper than hiring qualified electrical contractors. They were not qualified, not certified, and although some electricians were on staff, they did not have the correct ratio of master electricians to supervise these unqualified personnel. In fact, the use of one certified electrician supervising 30 to 45 TCNs was a disservice to the Government and perpetrated numerous serious incidents fostered by defense contractors, who used one master electrician to supervise too many unqualified personnel for the installation and maintenance. The lack of a qualified and certified workforce on the power and electrical infrastructure in Iraq and Afghanistan resulted in multiple deaths and Congressional involvement (consequence).

U.S. and Coalition forces' safety was compromised by the lack of electrical standards enforcement as well as the lack of a qualified electrical workforce.

The Effect

The lack of explicit enforcement of the electrical standards for the performance of O&M, and the lack of specified requirements for a qualified electrical workforce, compromised both U.S. and Coalition forces' safety and health at U.S. installations overseas. The enforcement of the Uniform Facilities Code (UFC), which is the minimum requirements for overseas installations, encompasses requirements from the National Fire Protection Act (NFPA 70), the National Electrical Safety Code (NESC), and the National Electrical Code (NEC). The NESC and NEC differ by the types of electrical installations they govern.



TF SAFE in Iraq and TF POWER in Afghanistan:

Task Forces implemented to enforce electrical standards and restore safe operations and living conditions for troops. Compromising electrical standards resulted in loss of life and costly Congressional involvement.

The Consequence

The two major consequences from the use of unqualified and non-certified personnel were the unnecessary loss of U.S. personnel life, and Congressional involvement. These consequences created second and third order effects that were deadly and costly. Costly mitigation efforts were necessary to ensure U.S. and Coalition personnel were safe. These mitigation efforts, such as Task Force Safe Actions for Fire and Electricity (TF SAFE), carried the mission to enforce an electrical standard in country, and to inspect and repair electrical hazards that threatened the life, health, or safety of personnel. TF SAFE was quickly implemented by using specialized electrical defense contractors who understood the necessity to adhere to electrical standards. The Government finally had access to the technical expertise to properly maintain power and electrical infrastructures without creating unnecessary consequences. TF SAFE was the solution for Iraq, but what about Afghanistan?

The identification of the lack of electrical standards in Iraq generated the assessment of electrical safety in Afghanistan. The results of the assessment, and the lack of electrical standards in Afghanistan, prompted the CJTF to establish Task Force Protecting Our Warfighters and Electrical Resources (TF POWER), to evaluate and enforce safe power implementation. Their mission was to “prevent the loss of life and government property, through immediate and long-term measures, which will significantly reduce the number of electrical and fire incidents throughout the combined/joint operations area.” (Assessment of Electrical Safety in Afghanistan, 2009)

Problem Summary

Understanding the problem requires an in-depth knowledge of the limitations of Government contracting and the need for qualified and certified electrical defense contractors to perform work on this critical infrastructure. The compromise of electrical standards resulted in loss of life and Congressional involvement; this was not foreseen and exposed vulnerability in U.S. procedures. Military Services and Government agencies attempt to learn from their mistakes, and make every effort to not repeat them; the situation above drove change in U.S. policy, procedures, and regulations. Contracting offices must be proactive and solicit specialized electrical defense contractors who are qualified, skilled, and have the integrity required to protect the critical infrastructure. This will ensure that technical experts are used to perform installations and O&M of power generation, distribution, and that electrical system meet the safety and electrical standards required.



Solving the Problem

The use of unqualified and non-certified personnel by general contractors demonstrates the need for a solution to assist the contracting officers, contracting officer representatives, and the end user in obtaining specialized services for the critical electrical infrastructure. In the past, defense contracting bundled electrical requirements under large Multiple Award Task Order Contracts (MATOC) for Operations and Maintenance (O&M), or Multiple Award Construction Contracts (MACC) for general construction projects. This has prevented specialized defense contractors from submitting proposals. The catastrophic failures of this contracting method in OIF and OEF have exposed a vulnerability and weakness that must be acknowledged.

In 2003, a concept was implemented at Bagram Airfield, Afghanistan (BAF) to defeat the problem and ensure the use of qualified electrical defense contractors, using certified U.S. journeyman and master electricians to protect the critical electrical infrastructure. The use of a SATOC (Single Award Task Order Contract) specifically for power generation, distribution, electrical wiring, and O&M, provided the opportunity to utilize a qualified and certified workforce. This Electrical Support Services (ESS) contract was competitively solicited and awarded.

The ESS contract has evolved since 2003, and is currently utilized as a MATOC. It has fostered the hiring of a qualified workforce successfully over the past nine years. The use of this contracting vehicle has allowed BAF's infrastructure to transition from a spot generation and O&M nightmare to an efficient and reliable system that includes quality work and materials. The current ID/IQ MATOC contract value is \$490 million for Electrical Support Services (ESS), which includes multiple defense electrical contractors, who hire qualified and certified U.S. journeyman electricians to perform work on the electrical infrastructure.

Concept

The concept establishes a utilities contract that requires qualified electrical contractors to utilize only certified electricians to perform the electrical work. In 2003, the BAF Facilities Engineering Team (FET) commander understood the need for a specialized workforce, and presented the concept to the CJTF Command for implementation. The command recognized the importance of having a dedicated electrical contractor to design, build, and maintain the critical infrastructure, and to sustain operations and

ESS (Electrical Support Services) contract was implemented; allowing qualified electrical contractors to bid on projects directly.

The ESS contract has given contracting officers a powerful tool to administer quality technical services for contingency and enduring bases.



The ESS contract vehicle gives contracting officers a powerful tool to administer technical services for contingency or enduring bases.

defeat an unassuming enemy's efforts to harm personnel and operations. The command also recognized the need for a contracting office, to assist in establishing this "insurance policy". The contracting office would ensure an electrical defense contractor was hired with a specialized workforce, to design, build, and maintain the power and electrical infrastructure.

The ESS contract vehicle has been used for OCONUS electrical infrastructure, power distribution, and O&M activities, specifically in Afghanistan. It was established to provide qualified electrical contractors, employing certified U.S. journeyman electrical technicians to meet the increasing demand for quality installations and maintenance of the electrical infrastructure. The establishment of this contract has given contracting officers a powerful tool to administer technical services for a contingency or enduring base. The use of this type of contract was also implemented in Iraq to establish TF SAFE, and respond to the serious problems there. The contract has evolved over time and now consists of four key entities:

U.S. Army Corps of Engineers (USACE), Philadelphia District

In August 2003, the U.S. Army Corps of Engineers, Philadelphia District (NAP) received an urgent request from the U.S. Army in-theater commanders for qualified electrical support. USACE Philadelphia is designated by HQUSACE to provide Global Emergency Power Contracting. Due to this charter, they were the likely choice for administering the contract. Their experience in global power contracting ensures the electrical requirements are incorporated into the contract, and ensures compliance with the U.S. electrical codes. Once presented with the requirements, NAP recognized the importance of this critical infrastructure, and how it would be used to support the contingency operations. They also knew how quickly the infrastructure could be destroyed if qualified electrical contractors and certified electricians were not used for Operations and Maintenance. Therefore, they implemented an ESS ID/IQ. Since its award, the contract vehicle has been renewed to provide the continuing support, and has been instrumental in expediting TF POWER in Afghanistan.

Military Customer

Most military units, excluding engineering units, do not understand the critical need for technical expertise in designing and building infrastructure. In the past, bases and camps have relied on non-experts to create a SOW, which could be as rudimentary as simply "need electrical work". This lack of expertise, in combination with minimal



materials and unqualified installations, quickly led to electrical hazards. The Field Engineering Team (FET) at BAF was the first unit to identify the requirement for better electrical service and materials. Due to their vast knowledge, they became responsible for generating the PWS or SOW for electrical services. The objective was to ensure BAF and other enduring bases were designed, built, and maintained in accordance with U.S. electrical standards, and to protect this infrastructure from unqualified personnel. The FET involvement was a key component in this process. It was very difficult to ensure continuity during the consistent transition of authority between units. After the first year of the contract's existence, USACE Philadelphia realized the need for increased continuity and support. This led to the incorporation of the 249th Engineer Battalion, (Prime Power) to assist the military customer, and act as the COR, to ensure this void was not recreated.

249th Engineer Battalion (Prime Power)

After the first year of the contract, Prime Power was tasked to continue the mission started by the FET. Since Prime Power is assigned to USACE, and serves as the Army's provider of commercial-level power to military units and federal relief organizations during full-spectrum operations, they seemed like a perfect fit. USACE NAP chartered this unit to perform contractor oversight for the ESS contract. They would assist the military customer in generating the PWS or SOW and then ensure the contractor provided the appropriate services as per the contract award. This has proven to be a successful concept for all parties involved.

Electrical Defense Contractor

USACE and the FET both knew they needed experts to perform quality electrical work, even though the end user did not. In order to guarantee the ESS contract was successful, they only allowed companies to compete for the contract that possessed the proper qualifications and certifications. The defense contractor of choice would be the linchpin for a successful transformation. This was not a general contractor who knew how to outsource inside electrical work, but an electrical contractor who possessed the ability to design, build, and maintain the infrastructure – from power generation and distribution to the end user. The contractors also needed the ability to present unique solutions for an ever-changing environment and increasing demands.

Only companies that possess the proper qualifications and certifications are allowed to compete for contracts, ensuring that work is completed safely and according to established codes.



Conclusion

General contractors have shown that they do not have the knowledge or experience to perform specialized work for the critical electrical infrastructure. The lessons learned from the use of unqualified and non-certified personnel have been costly, and should not be repeated in other theaters or future engagements. USACE Philadelphia has pioneered a contracting solution that ensures military customers receive the specialized workforce required to perform services on electrical infrastructure. They have established a Utility Services MATOC (Electrical Support Services (ESS)) that has served Afghanistan and Iraq very well. This contracting vehicle supports the Government from design to development, and ensures the proper maintenance is conducted, to guarantee an efficient power generation and distribution infrastructure.

There are several benefits to implementing a Utility Services MATOC for Electrical Services. The ESS MATOC established in Afghanistan has afforded the military customer and contracting office the assurance of quality electrical work, using qualified electrical defense contractors.

With the proven effectiveness of this contracting vehicle, the question becomes: "Why would the U.S. Government not implement this proven solution to ensure the protection of its personnel and operations?"



References

- Bronstein, Scott., "Multiple Failures led to Iraq electrocution, Pentagon says". (2009): Assessed 10 June 2012. http://articles.cnn.com/2009-07-27/us/military.electrocutions_1_kbr-heather-browne-grounding?_s=PM:US.
- CJTF Commander., 2008. Policy 5, Authorized Electrical Wiring.
- Cox, Mathew., "Contractor under fire for Iraq electrocutions: Families, ex-employees testify about firm's role". (2008): Assessed 15 June 2012. www.armytimes.com/news/2008/07/army_electrocution_071108w/
- Office of Inspector General (OIG)., "Review of Electrocutions Deaths in Iraq: Part I". (2009): Assessed 12 June 2012. http://mssparky.com/documents/Fact_Sheet_Electrocution_Deaths_in_Iraq.pdf
- Office of Inspector General (OIG)., "Assessment of Electrical Safety in Afghanistan". (2009): Assessed 11 June 2012. http://www.dodig.mil/SPO/Reports/D2009-SPO-005%20FINAL_web.pdf
- Risen, James., (4 may 2008). "Despite Alert, Flawed Wiring Still Kills G.I.'s". (2008): Assessed 15 June 2012. <http://www.nytimes.com/2008/05/04/world/middleeast/04electrocute.html?pagewanted=all>
- Risen, James., "Soldier's Electrocution in Iraq Was Negligent Homicide, Army Concludes". (2009): Assessed 14 June 2012. <http://www.nytimes.com/2009/01/23/washington/23electrocute.html>
- Risen, James., "After Deaths, U.S. Inspects Electric Work Done in Iraq". (2008): Assessed 13 June 2012. <http://www.nytimes.com/2008/07/01/washington/01electrocute.html>
- Risen, James., "Electrical Risks at Iraq Bases Are Worse Than Said". (2008): Assessed 18 June 2012. <http://www.nytimes.com/2008/07/18/world/middleeast/18contractors.html?pagewanted=all>



Inglett & Stubbs International
5500 S. Cobb Drive, Suite E
Smyrna, GA 30080

+1 404.591.2100
www.isiprime.com